



## SOUTH CAROLINA SEA GRANT CONSORTIUM

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# The Changing Face of Coastal South Carolina: Building a Resilient Future

FY 22-24 Biennial Sea Grant Request for Proposals

Biennial Sea Grant Program  
February 1, 2022 to January 31, 2024

Concept Letters Due at S.C. Sea Grant Consortium Office: March 5, 2021

Full Proposals Due at S.C. Sea Grant Consortium Office: June 4, 2021

February 1, 2021

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# OVERVIEW OF FY22-FY24 SEA GRANT REQUEST FOR PROPOSALS

The South Carolina Sea Grant Consortium (Consortium) is now soliciting proposals for consideration and possible inclusion in the Consortium's Biennial Program Plan for fiscal years 2022-2023 and 2023-2024. Included in this overview is a summary of the following topics:

- Introduction to the Consortium's Sea Grant Proposal Process
- Important Updates and Considerations for Prospective PIs
- An Overview of the Proposal Process

## INTRODUCTION

The Consortium is requesting **Concept Letters** which propose innovative natural and social science research to both understand and directly address priority issues and opportunities related to the use, management, and conservation of marine and coastal resources and ecosystem services as well as the challenges brought about by changes in climate and land use.

Consortium program priorities fall within the context of the NOAA National Sea Grant College Program Strategic Plan and the Consortium's FY18-23 Strategic Plan (see [www.scseagrant.org/strategic-plan](http://www.scseagrant.org/strategic-plan)) and focus on critical marine and coastal resource-related needs and opportunities for South Carolina and the region. Section I of this RFP includes a listing of the Consortium's priority research needs. PIs are strongly encouraged to submit Concept Letters *that directly address one or more of these priorities*. Concept letters that address other topics may be submitted; however, the burden of justifying the need for the effort proposed lies entirely with the investigator(s).

Interdisciplinary projects involving the natural, physical, and social sciences are appropriate and strongly encouraged. Although only faculty and staff from Consortium member institutions are eligible to submit proposals, they may have partners at other institutions. (see [www.scseagrant.org/about-us](http://www.scseagrant.org/about-us)). Multi-institutional and regional efforts are also encouraged, as are collaborations with colleagues in business, industry, and government agencies. Formal engagement of targeted stakeholders (e.g., resource management entities, local communities, business and industry, etc.) in both the development of concept letters and proposals and in the projects, if funded, is strongly encouraged. Project results must provide environmental, economic, and/or social benefits to an identified and engaged target constituency. In addition, PIs are expected to publish their findings in peer-reviewed journals.

PIs should contact the project-relevant Consortium research, extension, education, and communications staff to discuss cooperators and stakeholders in the public and private sectors as well as engagement and outreach plans (see [www.scseagrant.org/staff-directory](http://www.scseagrant.org/staff-directory) for Consortium staff listing).

## **Available Funding**

The Consortium anticipates having a minimum of \$500,000 available for new project starts in FY22. Because our program proposal will cover two years, new one-year projects may be scheduled to begin February 1 in either 2022 or 2023, dependent on FY2022 and FY2023 federal appropriations. A separate invitation for one-year proposals for 2023 starts will not be issued.

## Program Priorities and Proposal Guidelines

The Consortium's FY22-FY24 Sea Grant Omnibus RFP consists of the following sections outlined below; prospective PIs are strongly encouraged to read through all sections of the RFP before preparing materials for submission, as many sections have been modified or updated since the last RFP was issued two years ago.

<b>Section I -</b>	Program Area Priority Needs
<b>Section II -</b>	Concept Letters – Instructions for Preparation and Submission
<b>Section III -</b>	Full Proposals – Instructions for Preparation focused on proposal content. Submission instructions to be provided with comments from Concept Letters
<b>Section IV -</b>	Concept Letter and Full Proposal Review Criteria
<b>Section V -</b>	Funded Projects – Responsibilities and Reporting Requirements
<b>Appendix A -</b>	NOAA Guidance for Completing Budgets and Justifications

## Concept Letters

The first step in the proposal process is the preparation and submission of a Concept Letter for each project proposal being submitted; see Section II for instructions.

All Concept Letters must be submitted to the Consortium via email in both a Microsoft Word document and a PDF file.

***All Concept Letters are due at the S.C. Sea Grant Consortium office by 5:00 p.m. on March 5, 2021.***

## Concept Letter Review

Concept letters will be reviewed and evaluated by an external advisory panel, the Consortium management team, and S.C. Sea Grant program specialists. Prospective investigators with Concept Letters will be notified by April 16, 2021 of the review and evaluation results as well as the process for full proposal submission. PIs will be encouraged or discouraged to prepare and submit Full Proposals according to guidelines provided in Section III. Any PI that submits a concept letter is allowed to submit a full proposal; however, encouraged proposals have a much higher likelihood of being selected during the full proposal process.

## IMPORTANT NOTICES TO PROSPECTIVE PIs

With the increasing emphasis on project accomplishments, performance measures and metrics, and outcomes by the NOAA National Sea Grant Office, we are placing greater emphasis during the review of Sea Grant Concept Letters and subsequent Full Proposals on the applicability of research to identified audiences and expected outcomes. Therefore, please review the following information before you submit a Concept Letter. Concept Letters which do not take these considerations in mind will be reviewed less favorably.

## Proposed Work Must Address Needs of Identified Target Audiences

Federal program requirements call for Sea Grant competitive research and outreach projects to be outcome-oriented, address societal problems/issues/opportunities, engage users from the outset, support economic gains and/or savings, and result in the application of science-based information to foster decision-making.

Therefore, the Consortium is placing a higher level of emphasis on how well prospective PIs engage targeted stakeholders and describe how the proposed project addresses documented problems, issues, and/or opportunities related to the use and management of coastal and ocean resources as identified in this document. Prospective PIs are thus expected to:

1. Identify and engage target audiences in developing their research questions,
2. Describe how results from the proposed efforts will be translated into information, tools, and documentable outcomes,
3. Outline how project results will be extended, and
4. Indicate what portion of the proposed budget/effort will be devoted to target audience engagement and information outreach efforts.

Concept Letter and Full Proposal Review Panels are populated with outreach specialists and social scientists as well as natural science technical experts. Failure to provide documentation for outreach will lead to a lower rating of the Concept Letter and the Full Proposal.

*Prospective PIs are expected to contact the Consortium's Management, Extension, Education, and/or Communications staff for assistance identifying users/stakeholders and developing outreach plans as well as to engage Consortium staff in the proposed work.*

## Statement of Expected Outcomes

The Consortium requires prospective PIs to explicitly list the **Expected Outcomes** to be achieved for each year of the proposed project and potential practical implications and applications of the proposed work to the economy, environment, and society. We are particularly interested in societal and economic benefits, jobs created, new products/tools developed, workforce development results, policy or management changes, and similar outcomes. The instructions found later in Section II for Concept Letters and Section III for Full Proposals define this requirement in more detail.

## Diversity and Inclusiveness

The Consortium is committed to continuing efforts to enhance diversity, equity, and inclusion among its staff and research partners. We welcome and encourage applicants from diverse backgrounds. The Consortium expects to fund research and outreach projects that respond to the needs of the diverse people and communities in our state. PIs are encouraged to provide details on how activities will contribute to the achievement of socially-relevant outcomes including but not limited to:

- Increased racial and ethnic diversity in coastal and marine-related sciences,
- Increased public scientific literacy and public engagement, and
- Improved well-being in marginalized communities.

## Data Sharing Plan

All environmental data and information collected and/or created under NOAA grants and cooperative agreements must be made visible, accessible, and independently understandable to general users, free of charge or at minimal cost, and in a timely manner (typically no later than two years after the data are collected or created), except where limited by law, regulation, policy, or by security requirements. This requirement has two parts: (1) environmental

data generated by a research project must be made available after a reasonable period of exclusive use, and (2) the grant proposal must describe the plan to make the data available. Please review the NOAA Sea Grant data sharing directive prior to preparing your plan.

To comply with this requirement, prospective Principal Investigator(s) must include a Data Sharing and Management Plan in the Full Proposal stage, explaining how data and metadata will be offered and shared. Funds may be budgeted in the Full Proposal for this task. *These plans are not required at the Concept Letter stage; however, prospective PIs should indicate their willingness in the Concept Letter to include such a plan in their Full Proposals.*

## Electronic Submission of Concept Letters and Full Proposals

The Consortium requires email submission for Concept Letters. The Consortium is moving to an on-line submission process. Submission requirements and process for Full Proposals will be provided with comments on Concept Letters. The Concept Letters should be submitted as Word and PDF documents.

## Funding Levels

Successful major projects through the Consortium are generally supported in the range of \$20,000 to \$80,000 per year (somewhat higher for multi-investigator, multi-institutional proposals) and provide at least the required 50% non-federal match\* (that is, non-federal match of at least \$1 is required for every \$2 requested from Sea Grant).

## \*Indirect Costs on Sea Grant-funded Projects

In the spirit of cooperation among Consortium member institutions, and in order to get the maximum benefit from funds available for its programs, *it is the long-standing policy of the Consortium Board of Directors not to use Sea Grant funds to pay indirect costs to its member institutions; however, indirect costs may be used to satisfy the National Sea Grant College Program's 50% matching fund requirement.*

## THE PROPOSAL PROCESS IN BRIEF

Nearly one year is required from the conceptualization of a proposal idea to the formal award of Sea Grant funds (Table 1). This is necessary for several reasons. First, the conceptual merit of Concept Letters and the technical and scientific merit and utility of Full Proposals are rigorously reviewed by peer groups from academia, government, and stakeholders to ensure that proposed objectives are relevant, timely, achievable, of high priority, and consistent with the Consortium's strategic plan. Secondly, Concept Letters and Full Proposals are judged based on the probability of producing results that have practical applications, whether short-term or long-term, for specified target audiences.

The Consortium's Sea Grant Program operates on a biennial cycle that reduces the burden of both proposal preparation for investigators and proposal review for the Consortium staff. However, funding of Sea Grant projects, and requisite project reporting, remains an annual process. The start date of some approved projects submitted by investigators in response to the Consortium's Sea Grant RFP may be deferred to the second year of a biennium.

**Contact** with Consortium management, research, extension, education, or communications staff is advantageous and required during the Concept Letter development process (see [www.scseagrant.org/staff-directory](http://www.scseagrant.org/staff-directory) for a listing of Consortium staff and contact information). Projects being considered for Concept Letter development should be discussed with respect to merit and likelihood for funding support.

A **Request for Proposals (RFP)** at the beginning of each biennial cycle solicits Concept Letters outlining proposed research, education, and extension activities in priority areas identified by the Consortium. The priorities are identified with assistance from the Consortium’s Program Advisory Board and Sea Grant extension and education program advisory committees, representatives of state and federal resource agencies, and the State legislature. This input is informed through the Consortium’s Strategic Planning process, guidance from the National Sea Grant College Program (NSGCP) Strategic Plan, and consults with the NSGCP Office staff. The Consortium Executive Director and staff then develop the Request for Proposals.

**Table 1. PROPOSAL PREPARATION SCHEDULE**

(E-)Mail Sea Grant FY22-FY24 RFP Pre-announcement	January 19, 2021
Disseminate Consortium FY22-FY24 RFP and Guidelines	February 1, 2021
Concept Letters Due COB at Consortium Office	March 5, 2021
Review of Concept Letters	March 6–April 2, 2021
Notification of Successful Proposers and Invitation for Full Proposals	April 2, 2021
Successful Proposers Prepare Full Proposals	April 19–June 4, 2021
Full Proposals Due at Consortium Office, Signed and Endorsed	June 4, 2021
Written Reviews of Full Proposals	June 5–July 26, 2021
Technical Review Panel Evaluation of Full Proposals	Week of July 26 or Aug 2, 2021
Selection of Final Set of Proposals to be included in FY22-FY24 Sea Grant Program Plan	August 9–27, 2021
Notification of Successful Proposers	August 30, 2021
Successful Proposers Prepare Written Responses to Peer Reviews; Complete NEPA Forms	Sept 2–23, 2021
Discussion of Omnibus Program Plan between Consortium Executive Director and NSGCP Program Officer	September 2021
Consortium Prepares Final FY22-FY24 Sea Grant Omnibus Program Plan	October 2021
Consortium Submits Omnibus Program Plan to NSGCP for Processing	October 2021
Start Date for FY22 Projects	February 1, 2022

The Consortium **Request for Proposals (RFP)** is disseminated in early February. The RFP solicits **Concept Letters** as a precursor to the submission of Full Proposals. It is at the Concept Letter stage where a practical problem to be resolved and/or an opportunity to be explored must be explicitly stated and the beneficiaries of the work specifically identified and engaged. Concept Letters are due at the Consortium office March 5, 2021 via email.

The Concept Letter submission and review process constitutes the first major step in the proposal cycle for prospective PIs. Investigators whose Concept Letters are highly rated and address Consortium priorities will be encouraged to submit **Full Proposals** for consideration, however any PI that submits a concept letter is permitted to submit a full proposal for review. Investigators will be notified about the status of their Concept Letters by April 2, 2021.

Approximately nine-to-ten weeks are provided for the preparation of Full Proposals; they are due at the Consortium office on June 4, 2021. All Full Proposals are subjected to a rigorous written peer review and external panel review process during late July – early August, 2021. Comments received from outside reviewers and technical review panelists are summarized by the technical review panel (TRP), which offers its recommendations for funding. This information is then reviewed and summarized by Consortium staff, which is used by the Consortium Executive Director to make final funding decisions.

Successful Full Proposals address Consortium program priorities and meet constituent needs, formally engage target stakeholders/users; have a strong technical, scientific, methodological approach; and fit within the available budget are included in the Consortium’s proposed program plan. Investigators will be asked to prepare and submit a letter addressing reviewers’ comments during early September. The proposals themselves cannot be revised. PIs will also be required to complete NEPA forms during this time.

During October, the Consortium staff prepares the agency’s **final biennial Sea Grant Program Plan** for electronic submission to the NOAA National Sea Grant College Program (NSGCP) office through grants.gov. Final editing is completed and proposals are linked into program area components. Also, during this time, the Consortium Executive Director meets with the NSGCP Program Officer to discuss the package and provide additional information about ongoing program activities. The final program plan contains the required fiscal and administrative documentation (prepared by the Consortium) and is due in late October 2021 for processing by NSGCP, NOAA, and the U.S. Department of Commerce. This process takes from four-to-twelve weeks prior to the beginning of the Consortium’s Sea Grant fiscal year and the announcement of awards in late January for project start-ups on February 1, 2022.

## SECTION I: PROGRAM AREA PRIORITY NEEDS

Please note that there is a great deal of program area overlap in priority needs for Consortium research. Be sure to read through all areas that might apply to your interests as many priorities could fit into multiple program areas but are only listed once.

### I. HEALTHY COASTAL ECOSYSTEMS

#### Background

The natural features of the State of South Carolina are diverse and striking. South Carolina contains 2,876 miles of tidal shoreline, 500,000 acres of tidal bottoms, 504,450 acres of salt marsh (representing 20 percent of the East Coast total), some 4.5 million acres of freshwater wetlands (covering about 24 percent of the land area of the state), and 10,000 square miles of coastal ocean. The South Carolina coastline is characterized by more than 165 linear miles of beaches and dotted with more than 40 barrier and sea islands. Five major estuaries drain major watersheds originating from as far away as western North Carolina. Due largely to private-public-government partnerships, plantation lands and managed wetlands, remnants of the once flourishing rice culture industry of the late 18th and 19th centuries, remain remarkably intact today; many form the basis for significant refuge holdings and hunting and agricultural pursuits, while others have provided the "raw material" for resort development and tourism. Collectively, these lands represent the importance of the state's coastal heritage in shaping growth and development along the coast.

The coastal and marine resources of South Carolina are directly affected by (1) human influences throughout the watersheds in the coastal zone, (2) physical and natural processes of the state's adjacent coastal ocean, and (3) changes in climate and weather patterns. The focus of this program area is to support research and outreach efforts to assess and document natural coastal and oceanographic processes and the valuation of resources (and the services they provide) in response to the needs of targeted constituencies and decision-makers. Consortium stakeholders identified an improved understanding of natural processes, coastal and ocean ecosystem health, influences of climate and weather, additional landscape features such as stormwater ponds and other added natural or built infrastructure, and long-term conservation of natural and cultural resources as high priority areas for maintaining resilience, health, and well-being of our coastal communities. In addition, they suggested that the development of predictive tools for coastal ocean processes and estuarine water quality events, as well as determination of the economic and social value of resources and management tradeoffs, should be priority areas. Generating new baseline information is critically important in order to gain a better understanding of the effects and impacts that natural and anthropogenic influences are having on how our coastal and ocean environments function.

**Vision:** The ecological, social, and economic value of coastal and ocean ecosystem functions are documented and resultant information and tools are delivered to state and local decision-makers, resource managers, and interested public.

**Goal 1:** Sound scientific information is available to support ecosystem-based approaches to land use and resource management decision-making throughout the coastal and ocean environment.

**Objective 1.1:** Generate and deliver information on changes to ecosystem condition and health due to natural and anthropogenic forces, including climate change, and communicate this information to coastal decision-makers.

**Priorities:**

- Identify the ecological relationships of upland watershed ecosystems and changing climate and weather patterns to estuarine and coastal ocean productivity (e.g., changes in flow dynamics).
- Assess and develop practical and realistic models that predict and forecast the impacts of land-use change and practices on coastal watersheds (e.g., rivers, estuaries, salt marsh, tidal creeks) and the resources therein.
- Assess and develop practical and realistic models that predict and forecast the impacts of climate change on water quality.
- Assess the effects on ecosystem and living marine resource condition of changes in biogeochemical processes (source, transport, fate, exposure, and effects of materials and mixtures) due to population growth, tourism development, and urbanization.
- Examine the ecological relationships between living marine resource production in estuaries and tidal creeks and the availability and vulnerability of critical habitat areas under changing climate and development scenarios.
- Develop estuarine sediment transport models supporting the establishment of a regional sediment budget for the State of South Carolina.

**Objective 1.2:** Generate and deliver science-based information on the effects of changes in water quality and quantity on coastal and ocean ecosystems and communities to support land, water, and living resources management decision-making.

**Priorities:**

- Assess and model pathways and mechanisms for transport of key pollutants from the landscape into coastal waters to inform water quality management efforts.
- Evaluate and assess the extent to which harmful algal blooms (HABs) and contaminants that are captured in stormwater ponds travel to receiving waters.
- Identify the causes of and develop mitigation strategies for aquatic biotoxin production and exposure.
- Assess the impacts of reduced water quality and quantity on coastal ecosystem biodiversity and identify means to mitigate these impacts.
- Characterize impacts of additional freshwater or saltwater intrusion on coastal habitats and communities.
- Assess and characterize groundwater in coastal areas to examine salinity content and increasing height/depth due to sea-level rise.
- Assess the extent to which climate variability (e.g., droughts, salinity changes, precipitation) have impacted drinking water supplies (e.g., quality, quantity) in coastal communities.
- Examine and study how saltwater intrusion affects shallow water aquifers based on sea-level rise projections.
- Construct and evaluate the effectiveness of models of coastal ocean processes (e.g., upwelling) and water quality events (e.g., hypoxia) to assist resource planning and management decision-makers.

**Objective 1.3:** Integrate baseline data, standards, and key indicators to support ecosystem management decision-making affecting land, water, and coastal and ocean resources and public health.

**Priorities:**

- Identify relevant ecological, social, economic, and cultural baseline data, standards, and indicators of land, coastal, and ocean resources for use in ecosystem management and public health decision-making.
- Forecast physical changes (e.g., in temperature, salinity, turbidity, hydrology, freshwater delivery) on South Carolina's coastal ecosystems and resources due to increased variability in coastal hydrology and projected sea-level rise, and identify recommended strategies to address the effects.
- Estimate social, economic, and cultural values for ecosystem services (e.g., water quality enhancement, flood protection) provided by coastal habitats, including sand dunes, wetlands, salt marshes, oyster reefs, and beaches, to inform coastal zone management decision-making.
- Synthesize current state of knowledge and perform gap analysis of information regarding contaminants of emerging concern in South Carolina (e.g., microplastics, Perfluorooctanesulfonic acid (PFOS), pharmaceuticals).

**Goal 2:** Restored and enhanced function and productivity of coastal and ocean ecosystems.

**Objective 2.1:** Support preservation, enhancement, and restoration of oyster and salt marsh ecosystems.

**Priorities:**

- Develop stakeholder-driven and community-based demonstration projects that effectively protect and restore oyster and salt marsh habitats through the use of new approaches and technologies and the incorporation of evaluation metrics.
- Conduct research, education, and outreach programs that seek to prevent, remove, repurpose, and dispose of marine debris.
- Evaluate and compare coastal habitat restoration strategies to identify those that best improve the functionality of coastal creeks and streams with changes in sea level and increased weather variability.

**Objective 2.2:** Develop and provide new information, methods, and technologies that help minimize the introduction, spread, and negative impacts of coastal and ocean invasive species.

**Priority:**

- Working collaboratively with state and regional partners, assess and mitigate the impacts of invasive species on coastal ecosystems and human communities.

**Anticipated Outcomes****Goal 1:**

- South Carolinians are more knowledgeable about the natural processes that influence South Carolina's estuaries and coastal ocean waters.
- Science-based information is provided to natural-resource managers and decision-makers to support national, regional, state, and local resource-management objectives.

**Goal 2:**

- Oyster and salt marsh ecosystems are enhanced and restored through research and outreach programming.
- The identification and spread of invasive species are documented, and mitigation measures are developed and implemented.

## II. SUSTAINABLE COASTAL DEVELOPMENT AND ECONOMY

### Background

Population growth along the South Carolina coast is increasing at a rapid rate, with more than 300,000 new residents expected to move to coastal South Carolina by 2030. This growth has continued at a brisk pace putting the state among the country's top 10 fastest-growing states in both the pace of growth (ranked 6th) and actual number of new residents (ranked 9th) for 2018-19. According to the U.S. Census Bureau, a significant percentage of that growth is concentrated along the coast, particularly in the Myrtle Beach, Hilton Head, and Charleston metro areas, and showing no signs of slowing with an estimated 35 newcomers moving to the Charleston area daily (Charleston Metro Chamber of Commerce, 2016). This has and will continue to result in an explosion of residential and commercial development and concomitant pressures on the state's coastal and marine resources. Several examples of this growth highlight the magnitude of change that will occur in coastal South Carolina. Some 135,000 housing units are planned and will be constructed in the Charleston metropolitan region. Trends indicate that between 2018 and 2019, Jasper, Berkeley, and Horry counties were among the fastest-growing in the state (1st, 3rd, and 4th respectively).

Coastal resource management and economic development issues in South Carolina continue to challenge coastal zoning planners, resource managers, developers, and those involved in commerce, industry, recreation, and tourism. The Consortium plans to continue to examine coastal development and management issues and explore sustainable economic development opportunities in cooperation with state and local management agencies and coastal resource users. In this way, the needs of the state and region will be served simultaneously in terms of decision-making, planning, and assessment related to all facets of coastal development. The coastal-dependent economy in South Carolina encompasses a wide variety of businesses, including commercial fishing, recreational fishing, aquaculture, tourism, and future endeavors such as energy development.

Traditional, water-dependent uses of coastal waterfront property are drastically changing as more of the U.S. population moves to the coast, and pressure for "highest and best use" development increases. For example, commercial fishermen are finding it more difficult to find and afford docking space, fuel, and ice. Sustaining traditional working waterfronts and balancing the changing needs of coastal communities is a challenge for individual property owners, commercial and recreational fishermen, developers, and resource managers. Solutions are needed to help preserve the historical and diverse profiles of coastal communities while allowing for community-driven economic development.

Offshore energy development is a consistent topic of discussion. Two of the prominent discussions have been directed towards the development of wind energy and oil and gas exploration. The private energy sector is engaged in discussions about the potential for offshore wind energy development in the coastal ocean of South Carolina, and yet we have little foundational information about the environmental and societal issues that may arise as this potential is realized. Additionally, for years, the information available stated that the South Carolina coastal ocean was not suitable for gas or oil extraction; however, new information has indicated that it may have significant natural gas reserves. In addition, the ability to extract these resources has been limited by Federal policies which are currently being re-evaluated. Therefore, the prospect for gas and oil exploration and eventual extraction are raising expectations and related questions regarding coastal access and support and economic and environmental sustainability.

The focus of this program area is to provide information through the Consortium's research and outreach programs that document the impacts of land-use change and coastal and ocean resource development on marine and coastal

resources, low impact development alternatives, green space conservation, and development of coastal resource-based economic development opportunities in support of a balanced and equitable resource-based economy, environment, and society.

**Vision:** Decision-makers apply science-based information and tools to manage increased population growth and development resulting in sustainable and diverse communities, thriving economies, and healthy natural resources.

**Goal 1:** Healthy and viable coastal communities and economies include sustainable traditional and non-traditional economic opportunity and equity in coastal access.

**Objective 1.1:** Provide information and tools to coastal communities to enhance waterfront-related economic opportunities (e.g., commercial and recreational fishing, aquaculture, and energy and port development) without diminishing the long-term health of the coastal environment and the fabric of the local demography.

**Priorities:**

- Characterize the social, economic, cultural, and demographic factors that impact South Carolina's traditional water-dependent activities and identify options for sustaining these uses.
- Characterize the impact of climate variability and sea-level rise on working waterfronts.
- Identify the potential economic, societal, and environmental effects of expanding and new uses of the nearshore and offshore ocean environment on coastal waterfront communities and consider effects on preserving heritage and history.

**Objective 1.2:** Inform and assist coastal tourism and recreation businesses to foster a balance between the vitality and abundance of South Carolina's coastal and marine resources and the economic health of the tourism industry that depends on them.

**Priorities:**

- Generate and distribute information, management tools, and technologies on beach, marsh, and dune systems that can help communities manage coastal environments for recreation, tourism, maritime heritage, and cultural history.
- Identify avenues for rural, island, and small-town coastal communities to engage in the tourism economy in sustainable economic, environmental, and culturally diverse ways.
- Foster an increased interest in resource conservation and operational and program quality control for recreation and tourism organizations, including the S.C. Nature-Based Tourism Association, African-American Tourism Advisory Council (businesses), S.C. Travel and Tourism Coalition, S.C. Parks, Recreation and Tourism (industry and government), and S.C. African American Heritage Commission.
- Use ethnography and storytelling to characterize maritime cultural heritage and environmental sustainability in South Carolina.
- Develop partnerships and implement strategies to ensure that access to sustainable coastal tourism development opportunities is diverse and equitable.
- Determine the economic contribution of nature-based tourism and ecotourism on a statewide scale.

**Objective 1.3:** Support local, state, regional, and national efforts to preserve and increase public access to South Carolina's beaches, waterfronts, and waterways.

**Priorities:**

- Evaluate impacts of public access on coastal habitats.
- Develop and/or provide coastal communities with planning and policy tools to evaluate current and future needs for sustainable coastal access.
- Assess changes in access to coastal resources available to the public resulting from sea-level rise, storms, population growth, and the Coronavirus pandemic.
- Foster information exchange with regard to coastal access and working waterfront issues and initiatives.
- Assess and characterize perceptions concerning the need for enhanced services at coastal beaches, waterfronts, and waterways.

**Goal 2:** Coastal communities manage and conserve the resources needed to sustain their diversity and quality of life in light of rapid population growth, land-use change, and variations in climate and weather.

**Objective 2.1:** Work with federal, state, and local partners to develop and disseminate assessment tools, model plans and ordinances, best management practices, alternative development approaches, and other techniques that will enable communities to develop in environmentally and socially sound ways.

**Priorities:**

- Assess, evaluate, and compile existing assessment tools, plans, and ordinances and provide access to these resources.
- Generate and communicate research and information related to land-use change and population growth impacts on coastal and ocean ecosystems to coastal communities to support decision-making.
- Identify and evaluate regionalized approaches to land use, watershed, and coastal ocean planning to support integrated community and economic development projects.
- Evaluate the impacts from sea-level rise and climate variability on various Low Impact Development (LID) and other innovative systems.
- Identify, test, and deliver local and regional information on the cost-effectiveness, efficiency, and durability of watershed planning and management techniques (e.g., LID, Green Infrastructure) in controlling non-point source pollution and in managing stormwater runoff.

**Objective 2.2:** Communicate research and information related to the effects of land-use change, population growth, and climate and weather patterns on coastal and ocean ecosystems to coastal communities to support decision-making.

**Priorities:**

- Evaluate the effectiveness, efficiency, and durability of water and stormwater management techniques, including existing and sustainable development practices, and inform target audiences, such as individual landowners, of the results.
- Evaluate and project the effects of precipitation variability and sea-level rise on the functionality and effectiveness of existing stormwater ponds, and the design, siting, and construction of new stormwater ponds.
- Evaluate culturally significant sites in coastal communities to determine how environmental changes and related anthropogenic actions have impacted these sites, and document those that are vulnerable to future impacts in order to maximize conservation potential.

- Evaluate how increased population size and increased coastal development have impacted the ability for coastal populations to evacuate safely and effectively during climate hazard events.

**Goal 3:** State and local decision-makers possess the knowledge about the complex inter-relationships among the social, economic, cultural, and environmental characteristics of the coastal ocean (offshore) environment of the state and Southeast region, and the tools necessary to manage emerging uses and optimize economic and environmental sustainability.

**Objective 3.1:** Document the ecological, economic, policy, and societal implications of offshore energy development (e.g., oil, gas, and wind) on the South Carolina coastal landscape.

**Priorities:**

- Assess existing and potential public and private sector uses of the coastal and ocean resources which exist within South Carolina’s territorial sea to document and describe current – and the potential for future – multiple use conflicts.
- Determine the economic implications (e.g., cost changes, energy access, job creation, industry revenue, willingness-to-pay, externalities, infrastructure investment) of alternative energy use scenarios for South Carolina, including the use of offshore wind energy.
- Explore wind generation potential offshore and on the coast, and possible impacts on marine conditions and other coastal conditions.

**Anticipated Outcomes**

**Goal 1:**

- Traditional working waterfront uses become a prominent subject in the public dialogue on waterfront development.

**Goal 2:**

- Existing population growth and land-use change models are refined and improved.
- South Carolina decision-makers understand the impacts of development on coastal and ocean resources and develop strategies to address them.

**Goal 3:**

- Regional approaches are incorporated into coastal land use and watershed planning efforts by local governments.
- Decisions related to offshore energy and ocean uses and planning are addressed at a regional scale using science-based information.

**III. WEATHER AND CLIMATE RESILIENCE**

**Background**

The South Carolina coast is vulnerable to most known natural hazards, including hurricanes and coastal storms, flooding, rip currents, tornadoes, fires, drought, heat waves, shoreline change, and earthquakes, each of which has the potential to cause loss of life and/or substantial damage to the social, economic, and natural fabric of the state’s coastal landscape. Many of these hazards are also becoming exacerbated due to changes in our weather and climate; most notably, the impacts of sea-level rise and tidal flooding along our low-lying coastline. These impacts

include increased vulnerability to coastal storms, more frequent and severe flooding, accelerated erosion of ocean and waterfront areas, saltwater intrusion of surface and groundwater supplies, marsh inundation, and habitat alteration. While these impacts are already evident, many opportunities exist to plan and prepare for, minimize, and mitigate exposure to damages and facilitate recovery processes.

Planning for coastal hazards ranges from the short-term impacts to long-term pervasive issues. Attention to both the natural environment and human infrastructure is required, and enhancing resilience by communities must include assessing risk and understanding vulnerability, and developing and implementing response and adaptation strategies. With the explosion of population growth along the South Carolina coast, and the allure of Charleston and surrounding coastal communities to tourism, many residents and visitors alike are unfamiliar with the challenges posed by this unique environment, adding an additional challenge to a community's resilience.

The focus of this program area is to provide science-based information through research, outreach, and educational programs which documents our changing coastal weather and climate environment and the potential risks and effects on the natural environment, physical infrastructure, communities, and individuals. This includes episodic hazards as well as impacts from long-term climate change. The Consortium works with the public and private sectors to assess vulnerability to the diverse hazards along the coast and develop appropriate methods for response, recovery, and adaptation, with a goal of enhancing coastal resilience in South Carolina and the region.

**Vision:** Coastal communities, residents, and businesses understand the risks and vulnerabilities associated with chronic and episodic weather and climate events, and are prepared for and able to recover from and adapt to these hazards with minimal disruption to social, economic, and natural systems.

**Goal 1:** Widespread community understanding of the risks associated with living, working, and doing business along the South Carolina coast encourages public and private decision-makers to create and adopt policies, plans, and ordinances to reduce risks, manage weather and climate events, and speed recovery.

**Objective 1.1:** Increase the base of scientific knowledge regarding weather and climate and the associated risks and impacts for citizens, industries, and decision-makers in coastal communities in South Carolina.

**Priorities:**

- Assess the effects of the interaction of short-term weather and long-term climate change on urban and rural communities, critical infrastructure, built and natural environment, cultural resources, and economies of South Carolina's diverse coastal communities.
- Assess risk perception of key audiences to weather and climate in South Carolina to inform response and improve communication.
- Assess and tailor weather and climate mitigation planning and adaptation tools for coastal communities in South Carolina.
- Conduct case studies to examine climate hazard and adaptation scenarios within estuarine and shoreline environments.
- Generate and convey scenarios for hazard preparation, adaptation, mitigation, and recovery to reduce negative impacts and increase benefits to communities.
- Identify trusted sources of weather and climate information used by the public and how those sources are incorporated into decision-making.

**Objective 1.2:** Provide science-based information to improve community capacity to prepare for, adapt to,

mitigate, and recover from weather and climate hazards.

**Priorities:**

- Identify and analyze opportunities and barriers that state and local decision-makers face in using information about climate variability in planning and/or undertaking adaptation options, including initiating adaptation planning and mainstreaming adaptation to climate variability and change into decision-making processes (e.g., local comprehensive plans, hazard mitigation plans, beachfront management plans). Conduct and convey results from community-scale vulnerability analyses of South Carolina's infrastructure, resources, and people to weather and climate scenarios.
- Convey risk-perception and risk-communication research and best practices to improve response and communication about risk before, during, and after a weather or climate event.
- Estimate market and non-market costs and benefits of adaptation approaches (green, grey, and hybrid) to develop robust benefit-cost ratios to inform resilience planning.
- Conduct research to gain a greater understanding of socioecological tipping points with respect to climate change (e.g., when beach renourishment becomes economically unviable, when preferences for oceanfront property shift, how much aquaculture production is needed to offset declines in wild harvests, when does tourism overcrowding become an issue).
- Develop co-produced science-based timelines for climate change and sea-level rise impacts and effects to ecosystems and communities.

**Objective 1.3:** Facilitate the use of science-based research resource sharing and collaboration in the implementation of adaptive weather and climate management at varying governmental levels.

**Priorities:**

- Conduct research to identify effective and collaborative standards and metrics for assessing weather and climate resiliency.
- Develop interdisciplinary approaches to weather and climate hazards that integrate findings from social and natural science to support effective policy and management decisions at all levels of government.
- Develop new or adapt existing mitigation and adaptation strategies and planning tools for public officials.
- Develop and apply decision-support tools that enhance local community awareness, mitigation, and adaptation planning.

**Objective 1.4:** Encourage environmental justice through the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development and implementation of environmental policies.

**Priorities:**

- Engage in meaningful information exchange and knowledge co-production with historically marginalized communities and neighborhoods in order to support science-based and place-based adaptation actions that enhance community resilience to climate change.
- Evaluate perceptions and estimate conservation values for preserving and maintaining heirs' property as culturally significant or environmentally beneficial green space.
- Assess the level of environmental health literacy, especially in high exposure communities, to determine effective strategies in raising awareness of the connection between a healthy environment and human well-

being.

- Determine optimal communication strategies to effectively inform rural, island, and marginalized communities of environmental health risks (e.g., food safety, recreation safety, fishing/harvesting safety).
- Explore and study how to implement adaptation measures in rural and low-capacity communities.
- Assess and examine policies related to assisting communities with adaptation and improving resilience to the impacts of climate change.

**Goal 2:** Generate and distribute information, management tools, and technologies on beach, marsh, and dune systems that can help communities prepare for and mitigate the impacts of shoreline changes.

**Objective 2.1:** Evaluate the effects of hazards on beachfront, estuarine, and tidal marsh shorelines, including the impacts from hardened structures.

**Priorities:**

- Assess and predict long-term and episodic trends in beachfronts and tidal marsh shorelines accounting for anthropogenic responses (e.g., nourishment, hard structures, and dune alterations) under changing climate conditions.
- Establish and evaluate model criteria necessary to determine the efficacy of beach nourishment programs.
- Conduct research and engagement that produces social, political, or economic case studies of successful or unsuccessful climate hazard and adaptation scenarios in coastal areas including economic changes.
- Develop communication tools/strategies which highlight the risk of driving through flood waters, focusing on high-risk areas and underserved communities.

**Anticipated Outcomes**

**Goal 1:**

- Coastal communities increase their awareness of socio-economic, structural, and natural resource impacts of changing weather and climate.
- Mitigation and adaptation techniques are developed and used in response to changing conditions in vulnerable areas.
- Data visualization and decision-support tools provide communities with pertinent, comprehensive, and timely information for planning and response.
- Coastal decision-makers have the capacity to incorporate science-based data and information in hazard planning, preparation, response, emergency management, and response efforts.
- Widespread community understanding of the risks associated with living, working, and doing business along the South Carolina coast encourages public and private decision-makers to create and adopt policies, plans, and ordinances to reduce risks, manage weather and climate events, and speed recovery.

**Goal 2:**

- State and federal resource management agencies in South Carolina are utilizing shoreline change information in management and policy decision-making.

## **IV. SUSTAINABLE FISHERIES AND AQUACULTURE**

### **Background**

In South Carolina, seafood is synonymous with hospitality. It is our link to the past and to our natural environment; our conversation starter. South Carolinians harbor a strong connection to the waters which support the production of world-class seafood. Expansive salt marshes support our state's leading fisheries: shrimp, crab, and oysters. Our shellfish aquaculture industry is expanding to capitalize on market demand for premium single oysters and is reliant on those same marshes to sustain success.

South Carolina fishermen and shellfish growers are employed in producing a large variety of products. Shrimp, blue crab, and oysters are our top products, but clams and a variety of finfish are near the top of the list as well. Multiple soft-shell crab shedding operations - both large and small scale - provide a significant economic jolt for crab fishermen every spring. The state's fishery for horseshoe crabs is unique in that horseshoe crabs can only be collected for biomedical purposes, meaning they are blood donors which are returned to the sea after being bled. This is a significant contributor to our fishery, and the lab that bleeds crabs is a major employer in Charleston. Our state is home to roughly 30 shellfish growers and two shellfish hatcheries. Despite significant challenges in the past seven years, our oyster mariculture industry has adopted off-bottom techniques and continues to grow.

Increasingly, culinary professionals (chefs, food stylists, writers, grocers, etc.) are playing an important role in our seafood industry. They are educating consumers about production methods and raising the profile of South Carolina seafood. Small-scale, family-operated businesses employing boutique marketing techniques are becoming more common on the South Carolina coast. Wholesale seafood businesses remain strong, but production is more sporadic than in years past, requiring diversification of revenue streams or taking additional steps to justify a higher product price to remain profitable.

Demand for South Carolina seafood is high. If one produces a quality product, it can be sold, which is good news for producers, but it means they need access to the technology and infrastructure to support production. Wild caught fisheries in our state, namely shrimp and finfish, are challenged by dwindling access to waterfront property to allow them to efficiently land and process their catch as well as maintain their boats. Expansion of shellfish aquaculture has the potential to provide significant environmental and economic benefits to the state. Perceptions of waterfront property owners to fisheries and aquaculture activities within their viewshed are generally positive, but vary along the coast. As more people take up residence along the coast, our seafood industry will be challenged with maintaining its position in both urban and rural settings. A modern, professional, competitive, and well-organized industry can face the challenges that lie ahead. One approach to this challenge involves greater collaboration among the fisheries sector, by strengthening professional associations, co-ops, and citizen science.

The focus of this program area is to generate and disseminate information through translational research, technology transfer, and extension and education on the development of sustainability in the fisheries and aquaculture sectors, in particular, the development of viable, sustainable marine fisheries technologies and practices.

**Vision:** Sustainable fisheries and aquaculture in the coastal region are economically vibrant and are compatible with changing demographics, business development, regulatory environments, and long-term conservation of natural and cultural resources.

**Goal 1:** Sustainable fisheries and aquaculture that balance the long-term ecological health of the resource and the social, economic, and cultural needs of communities.

**Objective 1.1:** Support the identification and development of innovative management strategies and other approaches through applied research to maximize the long-term sustainability of fisheries and aquaculture

enterprises in South Carolina.

**Priorities:**

- Document the relationships between fisheries production in estuaries and the quality and quantity of available habitat.
- Assess the effects of dynamic short-term and long-term processes related to changes in climate, hydrology, and circulation on fisheries recruitment and migration patterns, and determine the impacts such changes have or may have on fishing effort and landings.
- Build upon proven technological advancements in fish population studies, such as molecular genetics, infrared spectroscopy, remote video/audio monitoring, and other methods as a means for fiscal efficiency and improved accuracy in estimating marine resource stocks.
- Assess and characterize the natural (e.g., climate change) and human (e.g., encroachment) threats to the long-term viability of wild fish populations and aquaculture species.
- Develop methods to estimate the level of recreational harvest of key shellfish species in South Carolina (e.g., oysters, clams, shrimp, crabs) to inform sustainable fisheries management planning.

**Objective 1.2:** Enhance the seafood industry through translational research and technology transfer aimed at increasing sustainability, production, and profitability.

**Priorities:**

- Develop novel and alternative gear and system designs and materials to support sustainable fisheries industries.
- Conduct research to identify economically viable and environmentally sustainable aquaculture practices and operations at a variety of scales, with an emphasis on novel commercial species such finfish, baitfish, algae, and coastal plants.
- Identify value-added opportunities to diversify revenue streams for fisheries and aquaculture businesses.
- Investigate sustained technology transfer programming to commercial shellfish harvesters and shellfish aquaculture operators to ensure sustainable and economically viable businesses.

**Objective 1.3:** Foster enhanced communications among the fisheries and aquaculture industry, resource management agencies, and the public regarding living marine resource management and policy in South Carolina.

**Priorities:**

- Develop cooperative research and citizen science projects to address key data collection, management strategies, and policy issues, including documenting the long-term processes that impact South Carolina's living marine resources.
- Assess how increased coastal development has impacted rural community residents' access to marine resources, coastal recreation, coastal heritage sites, and economic opportunities by examining the state and distribution of public access infrastructure.
- Investigate perceptions from rural community residents on changes in access, and potential actions that would assist rural residents in having enhanced opportunities to access and utilize marine resources sustainably.

**Goal 2:** A healthy domestic seafood industry that harvests, produces, processes, and markets seafood responsibly and sustainably.

**Objective 2.1:** Seafood businesses adopt socially and economically viable and sustainable production practices.

**Priorities:**

- Document the degree of the “Greying of the Fleet” in South Carolina commercial fisheries, the implications of the ageing workforce and infrastructure, and explore strategies to mitigate these issues.
- Document and assess changes in the demographic and socio-economic dynamics of South Carolina’s commercial, for-hire, and recreational fisheries, including examination of (a) shifts in the average age of fishermen, (b) changes in operational expenses and regulations, (c) how the fisheries will change relative to offshore vs. inshore fishing, increased shore-based fishing, targeting different species, etc., and (d) economic incentives and policy alternatives that could be implemented to reserve waterfront access for such uses.

**Anticipated Outcomes**

**Goal 1:**

- The fisheries community has an increased understanding of fisheries ecology, fisheries management strategies, and the regulatory process.
- The fisheries community participates in cooperative research leading to a greater awareness of more sustainable fisheries practices.
- Improved communication, understanding, and collaboration are developed among commercial fisheries stakeholders, managers, and scientists.
- State and federal fisheries managers use Consortium-derived information in essential fish habitat and marine protected areas management.
- Innovative shellfish aquaculture practices are evaluated, tested, and implemented.

**Goal 2:**

- Seafood industry stakeholder understanding of regulatory processes is enhanced and engagement in management-related activities increases.
- Aquaculture and fishing industries are economically stable, environmentally sustainable, and diverse.
- Seafood harvesters, wholesalers, and distributors adopt safe and responsible practices for harvesting, handling, and marketing their products.

## **V. SCIENTIFIC LITERACY AND WORKFORCE DEVELOPMENT**

### **Background**

The scientific literacy program component of this Focus Area provides quality coastal and marine information that is reflective of the Consortium’s current research priorities and state and national science education benchmarks to K-12 students, informal and formal educators, and the public. Careers in ocean sciences as well as STEM (science-technology-engineering-math) skills are highlighted during program planning and delivery. Through professional development programs for formal and informal educators, community-action stewardship projects, and robust classroom lessons aligned with South Carolina State Science Standards and the national Ocean Literacy Essential Principles, the Consortium provides access to resources and training that facilitates the inclusion of marine, coastal, and natural resources information into science learning. The delivery of this information is frequently achieved through partnerships with free choice, informal learning centers such as aquariums, science centers, state and county parks, and museums.

A well-informed constituency is essential for balanced coastal and marine resource management and economic growth. Given the continuous influx of new residents and visitors to the South Carolina coast every day, it is imperative that the Consortium continue to serve as the purveyor of marine and environmental science information through programs, trainings, and resources for the state's youth and educators.

The Consortium's workforce development efforts are geared towards providing research and training opportunities for undergraduate and graduate students through Consortium-funded research projects. With more than one-half of the marine-related federal work force eligible for retirement within the next five years, the continuing emergence of new marine technologies and discoveries, and the increasing pressures on the nation's coastal and ocean resources due to population growth, the need for highly qualified and adequately trained professionals will continue to increase. Furthermore, the Consortium will continue to assist with the diversification of the ocean-based work force by promoting ocean- and coastal-related careers to under-represented groups.

**Vision:** A scientifically literate public, at both youth and adult levels, understands the value and vulnerability of coastal and marine resources, makes wise decisions regarding these resources, and supports the development of a well-trained and diverse workforce in coastal- and marine-related careers.

**Goal 1:** Coastal and ocean K-12 education programs foster scientific literacy, stewardship, and exposure to science-based careers in both formal and informal settings.

**Objective 1.1:** Design, implement, and enhance K-12 student (formal and informal) marine education and stewardship programs that are interdisciplinary and diverse, and align with South Carolina Science Standards and Ocean Literacy Essential Principles.

**Priorities:**

- Develop new educational resources that reflect the current Consortium research and outreach agenda to further the implementation of Sea Grant's K-12 educational programs.
- Develop opportunities for K-12 students in diverse urban, suburban, and rural communities to begin linking early education to workforce development.

**Objective 1.2:** Design, implement, and enhance professional development opportunities for educators that provide content and resources for incorporating ocean sciences concepts.

**Priorities:**

- Develop in-person and/or virtual professional development opportunities focused on relevant Sea Grant research that incorporate coastal and ocean science topics which can be adapted for classroom use.
- Develop opportunities for scientist-educator collaboration in research and education.
- Conduct a needs assessment of how ocean and coastal information can be packaged for diverse audiences (for each audience consider cultural sensitivity, education-level, gender, etc.).

**Objective 1.3:** Design, implement, and/or enhance stewardship-focused programs, including student-action and community-action projects.

**Priority:**

- Develop novel, pilot community-based and/or student-action environmental programs that focus on coastal issues and serve the community-at-large.

**Goal 2:** Coastal and ocean education programs foster the development of a diverse scientifically trained workforce.

**Objective 2.1:** Undergraduate and graduate students are trained to meet workforce needs in ocean science-related fields.

**Priorities:**

- Encourage the involvement of new faculty, professional staff, and students in Consortium-supported programs and activities through mentoring and research support.
- Provide educational and workforce development opportunities in coastal and marine fields of study to a diverse cadre of undergraduate and graduate students at South Carolina universities and colleges through mentoring, research support, and fellowship and internship experiences.
- Assess, predict, and communicate current and potential workforce needs and opportunities in the Southeast.

**Objective 2.2:** Support the development of a diverse workforce.

**Priorities:**

- Recruit and retain under-represented and underserved groups into the coastal- and ocean-related sciences at the college/university level.
- Identify best practices for educators to recruit minorities into the marine- and ocean-related sciences at the college/university level (e.g., minority mentoring programs on the internet).

**Goal 3:** Improve public understanding about the coastal and marine environment and related community issues.

**Objective 3.1:** Provide engagement opportunities for the general public.

**Priorities:**

- Collaborate with formal and/or informal educational institutions to develop new or enhance existing programs, exhibits, and outreach initiatives to engage the public in local discovery, volunteer, citizen science, and stewardship activities.
- Develop new programs that connect coastal and ocean science concepts to non-coastal geographic regions and broader environmental issues and concepts in South Carolina.

**Anticipated Outcomes**

**Goal 1:**

- K-12 educational materials, including curricula, are developed by the Consortium and are being used in classrooms and at informal education facilities throughout South Carolina.
- *Coastal Heritage Curriculum Connection* is accessed by formal and informal educators.

**Goal 2:**

- Cultivation and engagement of young and new faculty are supported through the Consortium.
- Graduate and undergraduate student training continues to be a priority for Consortium-supported research projects.
- South Carolina graduate and undergraduate students successfully compete for national and state fellowship and internship opportunities.
- Cultivation of culturally diverse undergraduate and graduate students to pursue ocean science careers.

**Goal 3:**

- Volunteers, including formal and informal educators, are engaged in stewardship activities, such as From Seeds

to Shoreline® salt marsh restoration and Beach Sweep/River Sweep® litter cleanup.

- The Consortium is partnering with a diverse group of organizations, institutions, and individuals.
- Consortium information is delivered to target audiences and the general public in a timely fashion and user-friendly formats.
- The demand for the Consortium's publications is increased.
- High-quality outreach publications are produced.
- Consortium website continues to be a significant source of coastal and ocean information.
- Consortium activities are covered in the traditional mass media and web-based media.
- Public understanding of coastal and ocean issues is increased.

## SECTION II: CONCEPT LETTERS – INSTRUCTIONS FOR PREPARATION AND SUBMISSION

Concept Letters are due at the S.C. Sea Grant Consortium office by 5:00 p.m. on March 5, 2021.

### Structure of Concept Letters

Concept Letters should present a synopsis of the proposed effort, and should include the following elements:

**Problem Statement:** Describe in concise terms the problem and/or opportunity to be examined, identify the targeted stakeholders and constituencies which are involved in the issue and will be involved in the project, and specifically reference the S.C. Sea Grant Consortium program priority(ies) it addresses.

**Objectives:** Clearly list the overall objectives and hypotheses for the proposed project, and list specific objectives by year if proposing a two-year project. Most projects are expected to be completed within two years of implementation; however, if the project is anticipated to take more than two years to complete, PIs will have to submit a Concept Letter (and Full Proposal) for the two-year period beyond the initial biennium for competition.

**Methods:** Concisely describe the proposed methods - reviewers should be able to make a preliminary determination about the appropriateness and innovativeness of the proposed approach for achieving the stated objectives. PIs must indicate their willingness to include a data sharing plan in their Full Proposals.

**Expected Outcomes:** The PI should outline planned outcomes and the timeframes (on an annual basis, for each year of the proposed effort) in which they will be achieved. Expected Outcome statements should address how the proposed project is expected to contribute to the economic, environmental, social, and educational sectors of South Carolina and the region. The following list provides some examples of the types of statements the Consortium is seeking:

- New tools/technologies to be developed
- Number of jobs to be created/saved
- Changes in community/government/industry “behavior,” e.g., passage of new ordinances, adoption of new policies, etc., that may result
- Economic value (e.g., revenues and/or savings) of expected benefits to target audiences
- Number of new curricula developed and used in schools
- Number of patent applications to be filed

In addition, PIs are strongly encouraged to support the careers of undergraduate and graduate students, and to publish project results in scholarly journals. Therefore, PIs should outline their expectations for both in this section.

Please note that all PIs will be expected to report on and document their Outcomes in their annual and final reports (See [Section V](#)).

**Targeted Audiences/Outreach/Education:** Identify the users, organizations, and groups which will be involved in the project and benefit from the work. Briefly identify the information products to be generated and the mechanisms that will be used to deliver resulting information to the target audiences. PIs are strongly encouraged to make contact with their target audiences prior to submission of Concept Letters to solicit their interest and seek their involvement in the proposed project. Prospective PIs are expected to contact the Consortium’s Sea Grant

Management, Extension, Education, and/or Communications staff for assistance identifying users/stakeholders and developing outreach plans as well as to engage Consortium staff in the proposed work (see [www.scseagrant.org/staff-directory](http://www.scseagrant.org/staff-directory) for Consortium staff listing). To increase the chance of Concept Letter success, user involvement during the preparation of Concept Letters and Full Proposals, as well as throughout the project itself, is strongly encouraged.

**Anticipated Results/Benefits:** Outline the anticipated results and their potential application/implications to the Consortium's priorities and the target audiences that have been identified in Section I.

**Personnel, Collaborators, and Stakeholders:** The Consortium strongly encourages PIs to include support for undergraduate and/or graduate students in their work, involve targeted stakeholders throughout the project, and include outreach specialists to assist with information exchange and delivery with stakeholders. PIs are encouraged to contact any of the Consortium's program staff for their assistance; the involvement of outreach specialists from other state institutions is also welcome.

List the names and affiliations of all investigators, cooperators, senior staff, and students (if appropriate), and briefly describe their roles in the proposed effort. Also describe all stakeholder partners, user interactions, extension and/or education program staff involvement, and other details on those individuals who will contribute to the project.

**Budget/Duration:** Include a rough budget estimate (broken down into salaries, wages, fringe benefits, travel, equipment (value of \$5,000 or higher), supplies, and other costs) for each year of the project. Indicate the length of the proposed effort (in years; typically two years).

## Preparation of Concept Letters

Please prepare your Concept Letter using the following guidelines:

1. The Concept Letter should be no longer than four (4) 8.5" x 11" pages.
2. Do not include any attachments to the Concept Letter.
3. Do not use a font smaller than 11 point.

## Submission of Concept Letters

All concept letters must be submitted to the Consortium on March 5, 2021 as both a Microsoft Word file and a PDF file, attached to an e-mail sent to [proposals@scseagrant.org](mailto:proposals@scseagrant.org).

## Review of Concept Letters

Concept Letters should be succinct but sufficiently detailed so that reviewers can make an informed evaluation of the proposal's relevance to Consortium priorities, its likelihood of producing actionable outcomes, and the capabilities of the PIs. Concept Letters will be reviewed by members of the Consortium staff and an external review panel consisting of public and private marine and coastal resource and management representatives. Concept Letters will be evaluated based on the same criteria by which Full Proposals are judged. These criteria can be found in Section IV.

PIs will be encouraged or discouraged to prepare and submit Full Proposals according to guidelines provided in Section III. Any PI that submits a concept letter is allowed to submit a full proposal; however, encouraged proposals have a much higher likelihood of being selected during the full proposal process.

## SECTION III: FULL PROPOSALS – INSTRUCTIONS FOR PREPARATION AND SUBMISSION

**Full Proposals are due at the S.C. Sea Grant Consortium office by 5:00 p.m. on June 4, 2021.**

Full Proposals should be prepared carefully with respect to style, clarity, manner of presentation, and conciseness. It is particularly important to fully indicate the nature of the problem or opportunity being examined, the Consortium priority(ies) being addressed, the relationship of the work to problems or opportunities of interest to the state and region, the nature of the results and products of the study, how the results will be of benefit (impacts) and to whom (target audiences), how targeted audiences will be involved in the project, and how the results will be delivered to those targeted audiences through specified outreach approaches. In addition, sufficient detail should be given on the methodological approach to be used in conducting the study. Each of these factors, along with the evaluation criteria listed in Section IV, will be evaluated during the peer and panel review processes.

This section is organized as follows:

- Proposal Forms and Instructions
- Instructions for Preparing Full Proposals
- Format Instructions
- Proposal Submission Requirements

### Instructions for Preparing Full Proposals

Forms needed for proposal preparation will be found in the Consortium's on-line proposal and reporting system. Instructions will be provided with the return of Concept Letters.

The Full Proposal will include:

1. Proposal Endorsement (Consortium form)
2. Project Summary, Proposal Title, Investigator Names and Affiliations
3. Introduction/Background/Rationale
4. Objectives
5. Detailed Methods
6. Targeted Audiences, Engagement, Outreach, Education
7. Information Products, Expected Outcomes, Anticipated Benefits
8. Related Work
9. Data Management Plan
10. References
11. Annual and Multi-Year Milestone Charts
12. Vitae (Consortium form)
13. Budget
14. Detailed Budget Justification

The **PROPOSAL ENDORSEMENT** serves as the official cover sheet for the proposal. This page includes the project

title, principal investigator's name and affiliation, and the TOTAL amount requested for the duration of the proposed effort. It also serves as the signature page for institutional endorsements; all Full Proposals should be reviewed by and endorsed, on the Proposal Endorsement page, by the Sponsored Programs office at your institution for accurate budget and matching funds commitment. Investigators are encouraged to submit their Full Proposals to their institution's research/business office for review and signatures at least one week before they are due at the Consortium office. These will be uploaded to the Consortium's on-line proposal system.

The **TITLE** should accurately reflect the nature of the proposal project and be free of technical jargon. Choose words to which the designated users of the project can relate. The name(s) and affiliation(s) of the key project investigator(s) should follow underneath the title.

The **INTRODUCTION/BACKGROUND** should be a well-developed rationale for the proposed effort must be presented and should emphasize the importance of the work to the target audience(s). The problem or need should be stated succinctly and should clearly define the audience who desires the solution or will benefit from the work, and briefly describe how the audience will be engaged. If the proposed research and/or outreach effort has economic importance, state the nature of the potential economic payoff in an objective fashion. This section should also provide a summary of the current literature as it relates to the project; a demonstrated knowledge of the literature is a key component of a successful Sea Grant proposal. Finally, the Consortium priority(ies) that the proposal addresses should be identified.

The **OBJECTIVES** section should begin with a statement of the overall goal of the project. The goal should be followed by a succinct set of measurable objectives and, for quantitative research proposals, one or more testable hypotheses. Proposals should include a set of concisely stated, measurable objectives for each year of work. Objectives clearly state what the project hopes to accomplish, and realistically identify the proposed outcome and application of project results. For example, "increase our knowledge of ..." is not measurable language; rather "to determine the role of X in such-and-such a system" is much more appropriate, and allows for the determination of whether or not the project, in fact, has done so. A short paragraph should follow each objective to support its rationale.

Technical procedures and the development and analyses of data should be fully detailed in the **METHODS** section. Use the objectives as subheadings and describe the procedures and methods to be used to meet each. Cite relevant literature. For quantitative research proposals, delineate how the hypothesis (hypotheses) will be tested and identify the controls to be used. Provide, in general terms, a timetable that identifies the sequence and duration by which objectives will be completed (e.g., "field studies will be completed by X and data analysis will begin..."); refer to the guidance on milestone charts below.

Evaluation includes the extent to which a proposal specifically identifies and involves its **TARGET AUDIENCES** and what **OUTREACH** and **EDUCATION** efforts will be used to convey project results to them. Therefore, PIs must identify the users, organizations, stakeholders, and other groups who will benefit from the work, and engage them directly as much as possible in the development of the proposal and in implementation of the proposed effort. In addition, information products to be generated must be identified and *the mechanisms, including outreach personnel, who will deliver* resulting information to the target audience should be outlined. Finally, PIs should identify how much of the proposed budget will be used for engaging target audiences. Prospective PIs should make contact with their target audiences as early as possible to gauge interest and involvement in the proposed effort prior to submitting Concept Letters; staff at the Consortium can provide assistance (see [www.scseagrant.org/staff-directory](http://www.scseagrant.org/staff-directory) for contact information).

In a brief section, the **INFORMATION PRODUCTS** to result from the proposed project should be described. These products will depend on the audiences to be reached as identified in the introduction. Journal articles and technical reports are geared to the professional community and are clearly expected to be generated by Sea Grant PIs; Sea Grant extension booklets and brochures are geared to stakeholders and the end users of the research. If Consortium Extension, Education, or Communications staff will play a role in the proposed effort in terms of disseminating resultant information, describe the participation. Note: the Consortium also requires annual and final reports on all projects; refer to Section V for more details.

The PI should identify specific **EXPECTED OUTCOME(S)** for each year of the proposed work. The PI should outline planned outcomes and the timeframes (on an annual basis, for each year of the proposed effort) in which they will be achieved. Expected Outcome statements should address how the proposed project is expected to contribute to the economic, environmental, social, and/or educational sectors of South Carolina and the region. The following list provides some examples of the types of statements the Consortium is seeking:

- New tools/technologies to be developed
- Number of jobs created/saved
- Changes in community/government/industry “behavior,” e.g., passage of new ordinances, adoption of new policies, etc.
- Economic value (e.g., revenues and/or savings) of benefits to target audiences
- Number of new curricula developed and used in schools
- Number of patent applications to be filed

In addition, *PIs are strongly encouraged to support the careers of undergraduate and graduate students, and to publish project results in scholarly journals.* Therefore, PIs should outline their expectations for both in this section.

Please note that all PIs will be expected to report on and document their Outcomes in their annual and final reports. The Consortium will collectively use these statements in order to: (1) report on progress in achieving its performance targets as outlined in its FY18-23 Strategic Plan as required by the National Sea Grant College Program, and (2) evaluate the progress of each Sea Grant project on an annual basis based on, among other things, success in achieving outcomes.

The **ANTICIPATED BENEFITS** section should concisely state how the results of the proposed project would improve or change the current situation based upon the information and products produced. How will the target audience(s) and stakeholders benefit from the work, and to what degree? What economic benefits might result from the successful completion of the proposed work? The Consortium and NSGCP will determine whether the proposed effort is conceptually sound based on the arguments made in this section.

Relationships to other studies and programs being performed both by the PIs and others related to the proposed work should be described in a brief **RELATED WORK** section. This section should identify other ongoing and related work in the proposed area of study and state how the proposal complements and/or augments this other work.

Prospective PIs must prepare a **DATA MANAGEMENT PLAN** as part of their Full Proposal narrative. The Sea Grant Data Management Policy and Framework is available ([www.scseagrant.org/wp-content/uploads/NOAA-Data-Sharing-Directive.pdf](http://www.scseagrant.org/wp-content/uploads/NOAA-Data-Sharing-Directive.pdf)) for guidance in developing the data management plan and includes a fillable template for submission with the Full Proposal. Please keep in mind the following when drafting your plan:

- The Data/Information Sharing Plan (and any subsequent revisions or updates) will be made publicly available at time of award and, thereafter, may be posted with the published data.

- Environmental data and information produced under this award and which are made public must be accompanied by the following statement: These environmental data and related items of information have not been formally disseminated by NOAA and do not represent and should not be construed to represent any agency determination, view, or policy.
- NOAA may at its own discretion use information from the Data/Information Sharing Plan to produce a formal metadata record and include that metadata in a catalogue to indicate the pending availability of new data.
- Failing to share environmental data and information in accordance with the submitted Data/Information Sharing Plan may lead to disallowed costs and be considered by NOAA when making future award decisions.

**REFERENCES** should be listed according to the standards established in the field of study.

Annual and multi-year **MILESTONE CHARTS** must be completed to illustrate the timetable for the completion of all tasks necessary to meet the proposed objectives. This will allow the Consortium to track progress of the project. This schedule should include a mechanism for interacting with users, such as the engagement of an advisory committee or presentations at appropriate professional meetings. Time for preparing the final report must also be included. Annual progress reports are due at the end of February for all projects continuing into the second year.

Biographical data should be provided on the **VITAE FORM** (two pages maximum) for each principal and associate investigator. Please be sure to include your phone number and email address as part of your professional address. Long resumes in lieu of this form are not acceptable as substitutes.

The **BUDGET** should detail and accurately reflect the actual annual and cumulative costs of carrying out the project. Therefore, **an individual budget form for each year** as well as **a cumulative budget form spanning the duration of the project** must be provided. An inadequate budget causes just as many problems as one that is inflated; please plan the budget request carefully. There are several federal provisions to be aware of - these are presented in the budget justification section below.

The **BUDGET JUSTIFICATION** should justify the need for Sea Grant funds for each and all line items, and outline matching fund use. It must explain the major duties of personnel and percentages of time for all participants, including undergraduate and graduate students. All capital and permanent equipment requests must be itemized along with the cost and specific justification of need. Permanent equipment requests of more than \$5,000 should be made on a 50-50 match basis. Funding for construction and the purchase of vessels and vehicles are not eligible for Sea Grant funding. Requests for travel funds must be described via the formula used for calculation (e.g., number of miles at cost per mile for so many trips to some destination). If you are requesting travel funds for a national meeting, indicate the importance of the meeting to the proposed work. In the same regard, provide a detailed list of the types of supplies to be purchased. It is important that the funds requested truly reflect the costs of the project and be thoroughly justified. A budget justification must be completed for each budget year of proposed work, and submitted as separate documents from the main body of the proposal.

Finally, submit, the names, institutional affiliations, addresses, phone numbers, and e-mail addresses of five or more prospective peer **REVIEWERS** from outside the state of South Carolina you feel are highly qualified to make substantive comments on the technical and conceptual merits of the proposal. They may or may not be requested to provide reviews.

## **Proposal Submission Requirements (for Full Proposals)**

Prior to initial submission, all Proposals MUST be reviewed by the Institutional Liaison and endorsed (on the

Proposal Endorsement form) by the designated signatory authority at your institution for accurate budget and matching funds commitment. We strongly suggest that the Proposal be sent to your institution's research/business office for endorsement and signatures at least one week before it is due at the Consortium.

**All Full Proposals are due at the S.C. Sea Grant Consortium office by 5:00 p.m. on June 4, 2021.**

Instructions for submission via the Consortium's on-line proposal and project management system will be provided when Concept Letter reviews are sent to investigators.

All Proposals will be reviewed by Consortium professional staff, Sea Grant program staff with expertise in the area of the proposed effort, and outside technical experts and independent business/industry/user professionals (the experts and professionals are chosen by the Executive Director) through a written peer and external panel review process. The standard professional **REVIEW FORM** provides a listing of the criteria used in the review process (see Section IV), covering both conceptual content appropriate to Sea Grant and technical merit of the plan of work. The reviews are then evaluated and proposals are either accepted or rejected. Prospective investigators whose proposals are accepted will be asked to address reviewers' comments by preparing a statement that will be attached to the original proposal; no revisions to the proposal itself will be allowed. Any subsequent revisions in the budget **MUST** be endorsed by the investigator's institutional signatory official.

### **National Environmental Policy Act (NEPA)**

NEPA requires that Federal agencies consider the environmental impacts of major Federal actions significantly affecting the quality of the human or natural environment. All research projects must furnish sufficient information to assist Sea Grant in assessing the environmental consequences of supporting the projects. Applicants will be required to cooperate with Sea Grant in identifying feasible measures to reduce or avoid any identified adverse environmental impacts of their proposal. Failure to do so shall be grounds for not selecting an application. An abbreviated **ENVIRONMENTAL COMPLIANCE (NEPA) FORM** will be required if the application is selected for funding.

## SECTION IV: CONCEPT LETTER AND FULL PROPOSAL REVIEW CRITERIA

The following criteria and rating scales will be used to rate Concept Letters and Full Proposals:

**A. Programmatic Justification** – The degree to which the proposed project addresses the priorities outlined in the guidance provided by the S.C. Sea Grant Consortium in its Request for Proposals and other program information.

Excellent (15)     Very Good (12)     Good (9)     Fair (6)     Poor (3)

**B. Rationale** – The degree to which the proposed project addresses an important state and/or regional issue, problem, or opportunity in the development, use, and/or conservation of marine or coastal resources.

Excellent (10)     Very Good (8)     Good (6)     Fair (4)     Poor (2)

**C. Clarity of Objectives** – The degree to which the proposed objectives address the problem or opportunity identified in the Rationale and Programmatic Justification sections and, in the case of research proposals, the relevance of the hypotheses upon which the objectives are based.

Excellent (10)     Very Good (8)     Good (6)     Fair (4)     Poor (2)

**D. Scientific/Outreach Methods** – The degree to which (1) the feasibility of the proposed methods and design of the proposed project will address stated objectives, (2) the use and extension of innovative, state-of-the-art methods to be used in the proposed project will advance the scientific or outreach discipline, and (3) the data sharing plan will meet the needs of the public.

Excellent (15)     Very Good (12)     Good (9)     Fair (6)     Poor (3)

**E. Expected Outcomes** – The degree to which the planned outcomes are clearly defined, in terms of interim and final measurable results and products, and with a reasonable timeframe for completion and delivery. Outcomes should be identified for each year, be measurable, and have a positive impact on the systems, technology, or management practices under study (e.g., cost savings, revenue generation, jobs created, new products/tools developed, workforce development).

Excellent (10)     Very Good (8)     Good (6)     Fair (4)     Poor (2)

**F. User Engagement** – The degree to which targeted users of the results of the proposed activity have been brought into the planning of the activity, will be brought into the execution of the activity, and will be kept apprised of progress and results, the adequacy of the methods to be used to engage the users, and whether resources have been allotted for stakeholder engagement.

Excellent (15)     Very Good (12)     Good (9)     Fair (6)     Poor (3)

**G. Dissemination of Results** – The degree to which the proposed project includes specific strategies for information delivery to and product development for identified targeted users (e.g., through the scientific literature, Sea Grant Extension and Communications products, educational efforts, etc.).

Excellent (15)     Very Good (12)     Good (9)     Fair (6)     Poor (3)

**H. Investigator's Knowledge of Field** – The degree to which the investigator(s) is (are) experienced, proficient, and recognized in their respective fields.

Excellent (5)     Very Good (4)     Good (3)     Fair (2)     Poor (1)

**I. Adequacy of Budget** – The degree to which the proposed budget will adequately support the proposed work and provide the necessary and appropriate amount and distribution of funding across budget categories.

Excellent (5)     Very Good (4)     Good (3)     Fair (2)     Poor (1)

## **SECTION V: FUNDED PROJECTS – RESPONSIBILITIES AND REPORTING**

The principal investigator of a Sea Grant project is responsible for all technical reporting and, in conjunction with the institutional business office, all fiscal reporting to the Consortium. In turn, the Consortium is responsible for technical and fiscal reporting to the NOAA National Sea Grant College Program (NSGCP). Consortium professional staff frequently communicate with Sea Grant PIs to discuss project progress and needs. Questions regarding budgetary matters should be directed to the Consortium's Assistant Director for Administration. Formal requests for budget changes and changes in project scope must be submitted to the Research Coordinator unless there is a drastic adjustment to the project or a significant NCE period of time is requested (see [www.scseagrant.org/staff-directory](http://www.scseagrant.org/staff-directory)).

This Section includes information on the following policies and procedures:

- Formal Award Agreements
- Changes in Project Scope, Duration, or Budget
- Disposition of Permanent Equipment
- Patent Policy
- Prior Approval of Survey Instruments and Brochures
- Reimbursement Conditions
- Fiscal Reporting
- Project Reporting
- Submission of Publications
- Citation and Acknowledgement Requirements

These and other conditions of the grant award are stipulated in the formal award announcements and agreements sent to the PI and institutions; please read through these documents carefully.

### **Formal Award Agreements**

The Sea Grant fiscal year begins February 1 with formal award announcements sent to the investigators and their respective institution's business office. The announcements include two copies of the Consortium Award Agreement signed by the Consortium Executive Director. The Award Agreements must be read and endorsed by both the appropriate signatory authority and the Principal Investigator of the Sea Grant project. The institution must then forward one copy of the signed original back to the Consortium for its records, and the project can formally begin.

### **Changes in Project Scope, Duration, or Budget**

Among the provisions of the Agreements is a set of special conditions of which the investigators should be aware. Significant changes in projects subsequent to the formal awards, whether budgetary or programmatic, require prior formal approval by the Consortium and, in some cases, the NSGCP as well. If you are unsure, please contact the Sea Grant liaison in your Sponsored Programs office or the Consortium's Assistant Director for Administration for clarification.

Any proposed changes affecting the following categories require prior written approval:

1. Any budget changes across line items that exceed ten (10) percent of the total federal budget amount.

2. The purchase of any item of permanent equipment (any single item costing \$5,000 or more) not specifically identified, justified, and approved in the proposal and budget.
3. Any foreign travel not previously identified, justified, and approved in the proposal and budget.
4. A change in the Principal Investigator.
5. Significant changes in time devoted to a project by a PI.
6. Any change in the scope of objectives of the approved project.

Principal Investigators must obtain such approval before making any substantive changes in project objectives, methods, budget, or schedule. Requests for changes must be submitted in writing through the institution's Sponsored Programs office to the Consortium. Recipients are not authorized to proceed with any changes until final written approval is received from the Consortium.

Requests for no-cost time extensions must include sufficient justification and be submitted at least 30 days prior to the end of the grant year, along with a budget for all remaining funds to be expended. Such extensions may be approved when any one of the following applies:

1. Additional time beyond the established expiration date is required to ensure completion of the original approved project scope or objectives; or
2. Continuity of Sea Grant support is required while a competing application is under review; or
3. The extension is necessary to permit an orderly phase-out of a project that will not receive continued support.

Approval of no-cost time extensions by the Consortium is based on an adequate reason for not meeting the project deadline. Unexpended funds are not, by themselves, justification for an extension.

In addition, all projects supported with federal funds must comply with the following:

- The recipient is subject to the provisions of the Fly America Act and must comply with the Act when scheduling transportation for travel paid for with federal funds.
- The recipient is encouraged, to the greatest extent practicable, to purchase American-made equipment and products with funding provided under a Sea Grant award.
- The Consortium must have on file a copy of each institution's approved indirect cost rate (IDC) agreement for proposals submitted for funding that include IDC costs as match (per Consortium policy).

## **Purchase and Disposition of Permanent Equipment**

The Consortium strongly encourages joint funding support for the purchase of permanent equipment. Thus, any PI who is requesting one or more items of permanent equipment (defined as any single object costing \$5,000 or more) should seek to match such purchase with an equal amount of funding from his/her institution.

Permanent equipment purchased under a Consortium project is and remains the property of the Consortium, but can remain with the investigator's institution pending approval from NSGO. The Consortium does reserve the right to transfer use of this equipment upon completion of the project. However, if the investigator and/or institution desires to obtain title to equipment purchased under an existing agreement, a formal written request must be made to the Consortium Executive Director at the end of the project. Final disposition of the equipment will then be determined under existing statutes.

## Patent Policy

The policy and procedures set forth in the U.S. Department of Commerce regulations (37 CFR 401), "Rights to Inventions made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts, and Cooperative Agreements," published in the Federal Register on March 18, 1987, shall apply to all grants and cooperative agreements made for which the purpose is experimental, developmental, or research work. The Consortium's Assistant Director for Administration should also receive with the final expenditure report a completed **FINAL INVENTION STATEMENT** if anything patentable was developed during the course of the project. Three copies of the statement should be submitted within six months after conception or first actual reduction to practice during the course of work. These forms are available from your institutional research/business office.

## Prior Approval of Survey Instruments and Brochures

In addition to any approval an investigator must receive per the policies of his/her home institution, prior approval of the use of all **survey instruments and brochures** to be used as part of any research effort must be received from the Consortium Executive Director. Suggestions and assistance can be provided, if requested, by the Consortium staff at that time.

## Reimbursement Conditions

Final reimbursement to institutions for expenses incurred under a Sea Grant project award may not be made until the Annual/Final Project Report is received from the PI and accepted by the Consortium office. The final invoice or at least ten (10) percent of the funds of any project will be held until the Annual or Final Report (whichever applies) is received and deemed complete.

## Fiscal Reporting

In addition to the official Award Agreement, fiscal documents that reflect the approved budgets are mailed to the respective institutional fiscal officers. The **FEDERAL AND MATCH EXPENDITURE REPORT** should be provided upon submission of every reimbursement request or annually (if no such requests have been submitted) and accurately reflect expenditures. Reports must be sent to the Consortium's Assistant Director for Administration by the institutional business office, with the appropriate endorsement. All payments by the Consortium are handled on a reimbursement basis. Future funding to the institution and/or investigator may be withheld if annual or final project reports are not received on a timely basis. If any problems concerning expenditure reporting arise, contact the Consortium's Assistant Director for Administration.

Final Fiscal Reports are due 60 days after the close of the project.

## Project Reporting

There are two categories of **project reports** that are required by the Consortium:

1. **Annual Reports**, prepared by the principal investigator, summarizing annual progress of a project which is proposed for continuation, and
2. **Final Reports**, prepared by the principal investigator at the end of a project, providing a concise summary of results of the entire project.

The **PROJECT REPORTING FORM** will be provided in the Consortium's on-line proposal and project management

system. A project report “reminder” is sent to all PIs 30 days prior to the due dates of the reports, which are as follows:

- **Annual Reports** are due 30 days after the end of the current grant year.
- **Final Project Reports** are due 60 days after the close of the project grant period.

If a Principal Investigator requests and receives a no-cost time extension for his/her project, (s)he must submit an Annual Report 30 days after the original end date of that project year. A Final Report will then be required 60 days after the last day of the extension period at the end of the project.

## Submission of Publications

Principal Investigators must furnish to the Consortium a PDF copy of all publications, technical reports, all thesis and dissertation abstracts, and other formal documents that are based on information generated through Sea Grant projects and intended for publication and/or public distribution. Complete electronic PDF copies of any theses or dissertations should be submitted along with the other materials.

## Citation and Acknowledgement Requirements

All PIs must note and adhere to the following:

- The financial assistance award number (provided in the Award Package) will be acknowledged in writing as the basis for funding the publication.
- For journal publications and videos that are produced based in whole or in part on the work funded by the Award Agreement, the PIs should ensure that the publication (including internet sites) bears the following notation:

“This (report, video) was prepared (‘in part’ if appropriate) as a result of work sponsored by the South Carolina Sea Grant Consortium and the State of South Carolina through National Oceanic and Atmospheric Administration’s National Sea Grant College Program, U.S. Department of Commerce financial assistance award [number to be provided]. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the South Carolina Sea Grant Consortium, NOAA, U.S. Department of Commerce, or the State of South Carolina. Additionally, the South Carolina Sea Grant Consortium and NOAA may copyright any work that is subject to copyright and was developed, or for which ownership was purchased, under financial assistance number [to be provided]. The South Carolina Sea Grant Consortium and NOAA reserve a royalty-free, nonexclusive and irrevocable right to reproduce, publish, or otherwise use the work for Federal purposes, and to authorize others to do so.”

- All non-journal article publications or reports shall bear the National Oceanic and Atmospheric Administration (NOAA), S.C. Sea Grant Consortium, and State of South Carolina logos on the cover of the first page, and include the following: “A publication (or report) sponsored by the South Carolina Sea Grant Consortium and the State of South Carolina pursuant to National Oceanic and Atmospheric Administration Award [number to be provided].”

These requirements do not apply to routine reports submitted to the Consortium and which are not intended for public distribution, such as project progress reports and financial reports.

## Consortium Liaison Officers

All Full Proposals require a formal institutional endorsement before they can be submitted to the Consortium. Your university's Consortium liaison official, listed below, can assist you with this and with other questions you may have.

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# APPENDIX A: NOAA GUIDANCE FOR COMPLETING BUDGETS AND JUSTIFICATIONS

## Matching Funds

A 50 percent match of the federal funds (i.e., one dollar of match for every two dollars of federal money received) is required on all Sea Grant proposals unless otherwise specified. Note that it is important to specify match contributions carefully to be able to demonstrate sources and amounts. Any match contributions identified by investigators are subject to federal audit that may result in additional costs to the institution.

Match may be in the form of selected “in-kind” services or additional funds from a specified institution, agency, industry, or nonfederal program. No funds from federal entities can be used as match.

*For Matching Funds, NOAA Grants Management Division (GMD) expects you to consider the following questions:*

- Is a match (non-federal share) required for this program?
- If yes, does the application meet the matching requirements?
- Are the sources of match clearly identified? (i.e., cash or in-kind.)
- Does the application provide adequate documentation to support in-kind contributions?
- Does the application exclude matching contributions, cash or in-kind, used for other programs?
- Does the application exclude federal funds used as match?
- Are all matching contributions necessary for accomplishing the project?
- Are all matching contributions in compliance with federal cost principles?

## A. SALARIES AND WAGES

### Budget

Assign personnel to the various categories according to the explanations provided which conform to NOAA/Sea Grant usage (these definitions do not necessarily conform to usage in your institution). Identify project personnel by position title as indicated on the form. Use accurate current salaries as the basis for calculating salaries and wages for each individual (do not use percentages). If funds are being requested to support a vacant position, so indicate (vac. pos.) and use a salary rate appropriate to the position. Enter months of effort as full-time equivalents, regardless of how many calendar months the individual will work on the project for both Sea Grant and matching funds. Entries must be done in separate columns as indicated on the form. Note: The number one audit finding is failure to keep good time and attendance records.

### Budget Justification

For Salaries and Wages, NOAA Grants Management Division expects the budget justification to address the following questions:

- Is each individual identified by position?
- Are time commitments such as hours/weeks/months per year for each position?
- Are the total charges for each person listed along with an explanation of how the costs were calculated?
- Do the combined charges for all activities of any individual exceed 100% of their time including match?

- Do the time commitments and charges appear reasonable?
- Are all individuals employees of the applicant organization? (If not, explain.)
- Is a cost of living increase built into the budget?
- Are salary increases justified for the grant period?
- Are any salary/personnel costs unallowable (i.e., Federal Employees or legislative personnel)?

## **B. FRINGE BENEFITS**

### **Budget**

Fringe benefits are those customarily paid by the grantee institution, following its usual practices in the payment of such benefits.

### **Budget Justification**

For Fringe Benefits, NOAA Grants Management Division expects the budget justification to address the following questions:

- Are fringe benefits identified as a separate item?
- Are all the elements that comprise fringe benefits indicated?
- Do the fringe benefits and charges appear reasonable?
- Are the total charges for each person listed along with an explanation of how the charges were calculated?
- Are fringe benefits charged to federal and matching categories in the same proportion as salaries?
- Statement to the effect of "Approved institutional rates".

## **C. PERMANENT EQUIPMENT**

### **Budget Justification**

For any item(s) of equipment that has a useful life of more than one year and costing \$5,000 per unit or more, a description of the item and associated costs is required. For Permanent Equipment, NOAA Grants Management Division expects the budget justification to address the following questions:

- Is each item of equipment listed?
- If over \$5,000 is there a description of how it will be used in the project?
- If over \$5,000 has a lease vs. purchase analysis been completed? Note: Often a lease versus buy analysis cannot be completed because no one leases it. In this case, the recipient should submit a statement of non-availability stating at least three sources that were contacted about leasing.
- For each item of equipment, is the number of units, cost per unit and total cost specified?
- Is each item of equipment necessary for the successful completion of the project?
- Are the charges for each item reasonable and realistic?
- Are disallowed costs excluded?
- Contingencies charges must be excluded!
- Reasonable miscellaneous can be allowed, but must be justified.

## D. EXPENDABLE SUPPLIES AND EQUIPMENT

### Budget Justification

Expendable supplies and equipment must be described according to major categories, e.g., chemical reagents, computer paper and supplies, glassware, lumber, etc. Fuel for boats should be budgeted here rather than under travel. Fuel for vehicles should be budgeted under E. Travel. The justification may be based on historical costs (note as such). For Expendable Supplies and Equipment, NOAA Grants Management Division expects the budget justification to address the following questions:

- Are supplies itemized by type of material or nature of expense?
- For general office or business supplies, is the total charge listed along with the basis for the charge (i.e., historical use rates)?
- For other specific supply categories, is the number of units, cost per unit, and total cost specified?
- Are the charges necessary for the successful completion of the project?
- Are the charges reasonable and realistic?
- Are disallowed costs (e.g., liquor, entertainment) excluded?
- Contingencies or miscellaneous charges must be excluded!

## E. TRAVEL

### Budget Justification

A detailed budget narrative is required for all travel. For Travel, NOAA Grants Management Division expects the budget justification to address the following questions:

- For foreign and domestic travel, is each trip listed along with the destination, estimated mileage, method of travel, cost per mile and duration, number of travelers, per diem rate for meals and lodging?
- If actual trip details are unknown, what is the basis for the proposed travel charges?
- Is the requested travel directly relevant to the successful completion of the project?
- Are the travel charges reasonable and realistic?
- Note: Funding for unknown foreign travel may be approved but the travel itself is not authorized until an award action request is submitted and approved.

## G. OTHER COSTS

### Budget Justification

For Other Costs, NOAA Grants Management Division expects the budget justification to address the following questions:

- Are items listed by type of material or nature of expense?
- For each charge, is the number of units, cost per unit, and total cost specified?
- Are the charges necessary for the successful completion of the project?
- Are the same charges listed elsewhere?
- Are the charges reasonable?

- Are disallowed costs (e.g., liquor, entertainment) excluded?
- Are charges which duplicate indirect cost items excluded?

For G.6., Subaward, NOAA Grants Management Division expects the budget justification to address the following questions:

- Is each subaward listed as a separate item? (Separate budgets are required for subawards regardless of the dollar value.)
- Are the products/services to be acquired described along with the applicability of each to the project?
- Do the costs appear reasonable and realistic?
- Are any sole source contracts contemplated?
- If yes, is a sole source justification included with the application which describes why the proposed sole source entity is the only source capable of meeting the applicant's project needs?
- Are disallowed costs excluded?
- Contingencies or miscellaneous charges must be excluded!
- Are there contracts with non-U.S. organizations?
- Do you have a CD-512 on file for each of your subgrants or subcontracts?

## H. INDIRECT COSTS

### Budget

Indirect Cost is the institution's negotiated Facilities and Administrative (Indirect) cost rate and its relation to those elements of the proposed grant budget to which that rate is to be applied. It is Consortium policy that Indirect Costs will not be allowed on Sea Grant-funded programs; however, they can be used to meet the 50% matching fund requirement. An institution will identify the direct costs to which indirect costs can be applied. An explanation for all indirect costs must be included in the budget justification.

Note: The recipient must use the indirect rate submitted with the application or upon award for the entire award period unless approved by the Grants Officer. Thus, if the grantee receives a new NICRA, the grantee must submit an AAR requesting to use it and be approved to use this, before it can be used.

### Budget Justification

For Indirect Costs, NOAA Grants Management Division expects the budget justification to address the following questions:

- Are indirect costs included in the budget?
- Is the correct rate being used? (If a lower rate than is authorized in the indirect cost rate agreement is being proposed, you must explain why your organization is deviating from the approved rate.)
- Is the rate applied to the correct base?
- Are charges which duplicate direct costs excluded? (If no, explain/revise.)
- Include a copy of the institution's most current federally-approved indirect rate agreement (IDC).