



Pennsylvania Sea Grant College Program

Request for Proposals

Funding Period
February 1, 2024 to January 31, 2026

RESEARCH PROGRAM SUMMARY

Pennsylvania Sea Grant College Program

Two-year Funding Period: February 1, 2024 to January 31, 2026

Proposal Preparation and Submission Instructions

- ✓ Preliminary (Pre) Proposal Submission: REQUIRED, due **February 22, 2023 at 5:00 PM, EST**.
- ✓ Full Proposal Submission: REQUIRED, due **June 7, 2023 at 5:00 PM, EDT**.
- ✓ Application instructions: this solicitation contains specific instructions on the format and content that must be adhered to in each proposal. Failure to follow the instructions outlined in the text below is grounds for rejection without review.

Program Overview

The Pennsylvania Sea Grant College Program seeks pre-proposals for its next funding cycle, February 1, 2024 - January 31, 2026. Researchers who develop projects that specifically impact Pennsylvania's watersheds and coastal communities in the focus areas of healthy coastal ecosystems, resilient communities and economies, sustainable fisheries and aquaculture, and environmental literacy and workforce development as outlined in Pennsylvania Sea Grant's strategic plan are encouraged to apply. Principal investigators should focus on outcomes that can be achieved in a 24-month period. Proposals must include a clear outreach plan for disseminating information to targeted audiences.

We anticipate funding five to seven grants at approximately \$50,000 per year per grant (not including indirect costs). A minimum 50-percent non-federal match is required (\$1 non-federal match for every \$2 federal dollars requested), including on indirect costs. Funding requests for one-year projects may not exceed \$50,000 and requests for two-year projects may not exceed \$100,000 (not including indirect costs). Funding is contingent upon NOAA approval and congressional appropriation of funds. Faculty members and researchers from Pennsylvania colleges, universities, state agencies, and not-for-profit research organizations are eligible to apply. Researchers from outside of Pennsylvania may serve as Co-PIs (refer to Section 3.0 for eligibility guidance). Pennsylvania Sea Grant support is offered on an open, competitive basis. The full solicitation with instructions specific to the request for proposals (RFP) will be maintained on the [Research Section](#) of the Pennsylvania Sea Grant website.

The Pennsylvania Sea Grant Program champions diversity, equity, and inclusion (DEI) by recruiting, retaining, and preparing a diverse workforce, and proactively engaging and serving the diverse populations of coastal communities. We are committed to building inclusive research, extension, communication, and education programs that serve people with unique backgrounds, circumstances, needs, perspectives, and ways of thinking. We encourage applicants of all ages, races, ethnicities, national origins, gender identities, sexual orientations, disabilities, cultures, religions, citizenship types, marital statuses, education levels, job classifications, veteran status types, and income, and socioeconomic status types to apply for this competitive research opportunity.

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Important Note for Principal Investigators

- Funding of all proposals is contingent upon Pennsylvania Sea Grant’s allocation from NOAA in the FY2024 and FY2025 federal budgets. Modification in the number of and funding for individual proposals may be made based upon the final program budget.

1.0 INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) established the National Sea Grant Program in 1966 to promote stewardship of coastal resources. In March 1998, Penn State Behrend, on Pennsylvania's and Penn State University's behalf, received funding from NOAA to initiate a highly focused Sea Grant outreach project related to the Lake Erie watershed and coastline of Pennsylvania. The program has since expanded to include the Susquehanna and Delaware River regions, and in April 2016, the National Sea Grant Office recognized Pennsylvania Sea Grant as a full Sea Grant College Program. The mission of the Pennsylvania Sea Grant College Program is to enhance the use and conservation of Pennsylvania's coastal, marine, and Great Lakes resources to create a healthy environment, resilient and inclusive communities, and a strong and sustainable economy through science-based research, extension, and education. Pennsylvania Sea Grant is part of a network of 34 Sea Grant programs administered by NOAA.

Pennsylvania Sea Grant is a partnership between university, government, industry, non-profit, and public stakeholders and is dedicated to the sustainable use, conservation, and management of Pennsylvania's coastal and watershed resources. The program seeks to bring together the best talent from Pennsylvania's academic institutions to address coastal challenges and opportunities. It also offers the unique capability to transfer research-derived technology and information to the public through its team of extension specialists, and to leverage the national network of Sea Grant programs. The integration of applied research, outreach, and education is a key component of the program.

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Using laboratory studies, field investigations, models, and/or socioeconomic studies, Pennsylvania Sea Grant seeks research proposals that provide scientific and socioeconomic information that can inform management and policy decisions for healthy coastal ecosystems, resilient communities and economies, sustainable fisheries and aquaculture, and environmental literacy and workforce development in Pennsylvania. Projects must demonstrate a connection between the proposed research, and the focus areas and strategies (one or more) highlighted in this Request for Proposals (RFP). A proposal must demonstrate integration among its scientific approaches, research outcomes, and outreach plan. Projects must also demonstrate a direct connection with users beyond academia, such as resource managers, community scientists, communities, and/or informal and formal learners. To that end, proposals must include a well-defined outreach plan for engaging and disseminating information to key audiences.

Pennsylvania Sea Grant encourages submissions by early career scientists and/or persons who have partnered with, or plan to mentor, early career scientists. Pennsylvania Sea Grant encourages multi-

campus and interdisciplinary teams, including proposals from faculty researchers at Historically Black Colleges and Universities, Minority Serving Institutions, and/or from traditionally underserved and underrepresented communities, as well as faculty who can demonstrate how their work and related outreach will benefit underserved and underrepresented communities.

Pennsylvania Sea Grant encourages projects that support students to become strong scientists and provide opportunities to practice community engagement and actionable science. Pennsylvania Sea Grant encourages projects that support students from underrepresented groups, people with disabilities, and/or people from economically or educationally disadvantaged backgrounds that may have limited their ability to pursue a career in Science, Technology, Engineering, and Math (STEM).

Discussions with Sea Grant staff and other outreach partners are encouraged in the early stages of pre-proposal development. PIs are encouraged to engage and collaborate with Sea Grant extension, education, and communication specialists, end users, and/or other outreach specialists to develop a comprehensive outreach plan in the full proposal.

2.0 PENNSYLVANIA STRATEGIC RESEARCH PRIORITIES

Pennsylvania Sea Grant is guided by a [Strategic Plan \(2024-2027\)](#), which details research and extension priorities, and future directions organized by Focus Areas. Pennsylvania Sea Grant is soliciting research proposals in the focus areas highlighted in the 2024-2027 Strategic Plan: 1) Environmental Literacy and Workforce Development, 2) Healthy Coastal Ecosystems; 3) Sustainable Fisheries and Aquaculture; and 4) Resilient Communities and Economies. Each Focus Area has associated Goals. Prospective researchers must indicate in their pre- and full proposals what Focus Area and Goal(s) their work will address.

Environmental Literacy and Workforce Development

It will take a workforce literate in science, technology, engineering, history, communications, and mathematics to protect and sustain Pennsylvania's natural resources. To develop environmentally literate community members, educational programs are needed to improve the understanding of how personal actions contribute to pollution, climate change, invasive species, habitat destruction, and other problems. Educated and involved youth and adults, and coordinated management is what is required to preserve, protect, develop, enhance, and restore limited resources to sustain current and future generations.

Meaningful environmental and watershed educational experiences are the hallmark of Pennsylvania Sea Grant PreK-12 program success and include lessons, activities, and stewardship project guidance to address Ocean and Great Lakes Literacy Principles. Educators and students will continue to benefit from local and place-based science to meet Pennsylvania's curriculum standards, including the Integrated Standards for Science, Environment, Ecology, Technology, and Engineering (Grades K-5) and the Integrated Standards for Science, Environment and Ecology (Grades 6-12) that were legislatively approved in April 2022 and must be fully integrated into classroom instruction for the 2025-2026 school year.

An environmentally literate public are the stewards who will conserve and restore precious coastal resources. To inform decisions regarding environmental literacy and workforce development in Pennsylvania, Pennsylvania Sea Grant encourages integrated research and outreach projects that address the below goals and/or priority research topics. Project ideas beyond the priority research topics are also welcome but must address the goals. Please note that only research-related projects will be considered for funding. Implementation projects will not be considered.

Goals

- A diverse, environmentally literate public that participates in lifelong formal and nonformal learning opportunities.
- A diverse, skilled, and environmentally literate workforce that is engaged and able to build prosperous lives and livelihoods in a changing world through traditional and innovative careers.

Priority Research Topics

- ✓ Assess impacts and effectiveness of the newly legislated Pennsylvania Integrated Standards for Science, Environment, Ecology, Technology, and Engineering (Grades K-5) and the Integrated Standards for Science, Environment and Ecology (Grades 6-12) on K-12 youth learners, on

curricular development and dissemination methods, or on new methods for professional development opportunities for educators.

- ✓ Examine and assess effectiveness of methods or programs (through the development of a compendium of best practices) that aim to increase the awareness of school-aged children to ocean, Great Lakes, and watershed careers or higher education opportunities.
- ✓ Identify the existing knowledge systems in under-resourced and under-represented communities for accessing information about the ocean, Great Lakes and watershed environments; determine the measures required to ensure appropriate and effective participation of diverse populations in ocean, Great Lakes and watershed education and research; and develop methods so that these populations and their knowledge systems will be more invested and engaged in watershed research, monitoring, and management in order to build capacity that is more reflective of Pennsylvania's under-resourced and under-represented populations.
- ✓ Develop and evaluate new ocean, Great Lakes, and watershed science curricula using the newly legislated Pennsylvania Integrated Standards for Science, Environment, Ecology, Technology, and Engineering (Grades K-5) and the Integrated Standards for Science, Environment and Ecology (Grades 6-12) that can effectively incorporate local impacts or case studies to boost the connectivity of watershed literacy to students and their home communities.

Focus Area: Healthy Coastal Ecosystems

Pennsylvania's aquatic habitats play a critical role in three of the world's great water resources – the Lake Erie, Delaware River, and Susquehanna River watershed ecosystems. Pennsylvania shares many ecological and economic challenges with neighboring states and provinces. These challenges include the rapid pace of coastal development, greater demands on fisheries resources, water quality degradation, increased demands on water supplies, changes to fisheries stocks, wetlands loss, proliferation of invasive species, and a host of other ecological and ecosystem impacts. It is essential for decision-makers and community members to understand the interconnectedness and interactions of these systems to maintain vital habitats and inform restoration efforts within ecosystems and watersheds.

Keeping ecosystems healthy is a challenge because of the diversity of stressors each system faces. This stewardship is further complicated because Pennsylvania ecosystems cross many political boundaries. Responsible management of these systems requires new ways of thinking and actions, often termed ecosystem-based management. New approaches require unprecedented levels of coordination and collaboration among federal, state, and local jurisdiction and the active engagement of the people who live, work, and play along Pennsylvania's coasts and rivers. They also require understanding of the characteristics of species, landscapes, and their interactions within each ecosystem. Pennsylvania Sea Grant leads regional approaches to understanding and maintaining healthy coastal ecosystems, including employing planning efforts across the Commonwealth to identify information gaps, implementing research priorities, and coordinating information and technology transfer to the people who need it.

To inform decisions regarding the sustainability of healthy coastal ecosystems in Pennsylvania, Pennsylvania Sea Grant encourages integrated research and outreach projects that address the below goals and/or priority research topics. Project ideas beyond the priority research topics are also welcome but must address the goals.

Goals

- Coastal and Great Lakes habitats, ecosystems, and the services they provide are protected, enhanced, and/or restored.
- Land, water, and living resources are managed by applying science, tools, and services to sustain resilient coastal and Great Lakes ecosystems.

Priority Research Topics

- ✓ Develop measures and tools to predict, prevent, prepare for, understand, control, or mitigate the introduction or range expansions of aquatic invasive species in Pennsylvania waters.
- ✓ Evaluate ecosystem services of critical habitats before and after introduction of aquatic invasive species.
- ✓ Identify and evaluate potential ecological and human health effects of marine debris and emerging contaminants, including microplastics and PFAS, and develop solutions to address effects.
- ✓ Develop a tool to predict most vulnerable areas of aquatic habitats to assist in prioritization of restoration projects (include primary issues such as fluctuating water levels, erosion, invasive species introduction, and human recreation impacts).
- ✓ Evaluate the effectiveness of restoration and protection practices to prevent and/or reduce loading of nutrients, sediments, and other pollutants within a watershed.

Sustainable Fisheries and Aquaculture

Pennsylvania's fisheries are complex webs of fish populations, their aquatic environment, and the people who use and enjoy them. These fisheries are under stress and innovative approaches are needed to manage and sustain them. The Lake Erie, Delaware River, and Susquehanna River fisheries have been important fisheries for centuries. As the climate and ecosystems change, fish populations will also change, which may result in impacts to the economies that rely on fisheries. Pennsylvania Sea Grant collaborates with fishing operators and businesses, anglers, scientists, and managers to address key fisheries issues including fish biology and population dynamics, fish health, habitat and ecosystem health, the potential impacts of climate change, and socioeconomic impacts. To inform decisions regarding the sustainability of fisheries and aquaculture in the Commonwealth, Pennsylvania Sea Grant encourages integrated research and outreach projects that address the below goals and/or priority research topics. Project ideas beyond the priority research topics are also welcome but must address the goals.

Goal

- Natural resources are sustainably managed to support coastal communities and working waterfronts, including commercial, recreational, subsistence fisheries, and aquaculture.

Priority Research Topics

- ✓ Determination of what classifies as a barrier (e.g. barrier height, pool depth, stream velocity, etc.) to steelhead (*Oncorhynchus mykiss*) migration in Pennsylvania Lake Erie streams.

- ✓ Development of a tool aquaculture farmers can use to self-assess farm sustainability (economic, environmental, and social) to help farmers make improvements and increase efficiencies in their systems.
- ✓ Determination of the barriers preventing aquaculture farmers from producing food in Pennsylvania and how these barriers can be overcome.

Researchers involved in funded projects with an aquaculture focus will be invited to join the Great Lakes Aquaculture Collaborative (GLAC), a working group coordinated by Minnesota Sea Grant and including the following Great Lakes Sea Grant programs: Illinois-Indiana, Michigan, New York, Ohio, Vermont, and Wisconsin. GLAC will organize member-driven activities that may include quarterly meetings, workshops, conference special sessions, mini-conferences, special issue journal proposals and coordinated communications to amplify research impacts. GLAC members will also assist researchers where appropriate by networking with producers, relaying research results on the GLAC website and providing communication opportunities among the Great Lakes Sea Grant programs.

Focus Area: Resilient Communities and Economies

Pennsylvania's communities in the Lake Erie, Susquehanna River, and Delaware Estuary watersheds provide vital economic, social, and recreational opportunities for millions of residents and visitors alike. These watersheds are experiencing development pressures, even in those locations experiencing no population growth. This development transforms natural habitats into urban or suburban landscapes and intensifies the use of finite coastal resources. Population increases and urbanization result in greater vulnerability of communities and environments to hazards. Natural hazards include hurricanes, tornados, extreme rain and flooding events, blizzards, droughts, and heat waves. Technological hazards include chemical and oil spills, and even nuclear reactor accidents.

Accommodating growing populations or land use development while also stabilizing demands on coastal resources and community resilience requires the development and implementation of innovative management policies and technologies. Pennsylvania Sea Grant will continue to support innovative education, research, and outreach efforts in the areas of marine-related energy sources, climate change, coastal processes, energy efficiency, hazards, stormwater management, and tourism. Pennsylvania Sea Grant will engage Pennsylvanians in applying the best-available scientific knowledge to address increased demands on vulnerable coastal resources.

Pennsylvania Sea Grant supports the development of resilient coastal communities that sustain vibrant economies, effectively respond to, and mitigate natural and technological hazards, and function within the limits of their ecosystems. To inform decisions regarding the sustainability of resilient communities and economies in the Commonwealth, Pennsylvania Sea Grant encourages integrated research and outreach projects that address the below goals and/or priority research topics. Project ideas beyond the priority research topics are also welcome but must address the goals.

Goals

- Coastal and Great Lakes communities have the capability and resources to prepare for and adapt to extreme and chronic weather and coastal hazards, climate change, economic disruptions, and other threats to community health and well-being.
- Water resources are enhanced, sustained, and protected to meet existing and emerging needs of the communities and economies that depend on them.

Priority Research Topics

- ✓ Population carrying capacity of the Lake Erie watershed in the face of a changing climate.
- ✓ Evaluate and model littoral drift along the Pennsylvania Lake Erie coast and the influence of littoral drift on sand nourishment needs on Presque Isle State Park beaches.
- ✓ Assess the economic value of natural resources and their value to recreationists and communities, including:
 - enhancing our understanding the economic impact of aquatic invasive species on communities or sectors in Pennsylvania; or
 - identifying the contribution of recreational boating in the Lake Erie, Susquehanna River, and/or Delaware River watersheds to the Pennsylvania economy and evaluating social science aspects to determine boater attitudes pertaining to quality of boating experience
 - Develop technologies and research-based strategies for creating and maintaining resilient communities, including:
 - conducting social vulnerability assessments of Pennsylvania coastal communities;
 - reviewing ordinances to determine barriers for green stormwater practices (GSI) implementation; and
 - assessing changes to land use, housing availability, and other community capacities related to climate migrations.

3.0 AWARD AND ELIGIBILITY INFORMATION

Award Information

The award period for research projects is February 1, 2024 to January 31, 2026. We anticipate funding five to seven grants at approximately \$50,000 per year per grant (not including indirect costs). A minimum 50-percent **non-federal cost match** is required, including on indirect costs (\$1 non-federal match for every \$2 federal funding requested). Funding requests for one-year projects may not exceed \$50,000 and requests for two-year projects may not exceed \$100,000 (not including indirect costs). Full federally negotiated indirect cost rates are allowable. Funding of all proposals is contingent upon Pennsylvania Sea Grant's allocation from NOAA in the FY2024 and FY2025 federal budgets. Modification in the number of and funding for individual proposals may be made based upon the final program budget.

Pre-proposals will be reviewed, and a subset will be encouraged for submission as full proposals. All investigators submitting a pre-proposal, however, are welcome to prepare and submit a full proposal even if not encouraged. Successful full proposals are forwarded to the National Sea Grant Office (NSGO) for final funding approval. Inclusion of a proposal in Pennsylvania Sea Grant's proposal package to the NSGO does not guarantee final approval or funding.

Important Notes for Principal Investigators

- All applicants, including those from Penn State University and Penn State University Commonwealth Campuses, must adhere to the guidance of this RFP, including indirect and non-federal match requirements.
- Investigators from The Pennsylvania State University and Penn State-campus submitting proposals may only request indirect charges at the off-campus research rate per agreement with the Office of Senior Vice President of Research (OSVPR).

Eligibility Information

Pennsylvania Sea Grant is committed to building an inclusive program that serves all people including those with unique needs, circumstances, perspectives, and ways of thinking. Eligible applicants of all ages, races, ethnicities, national origins, gender identities, sexual orientations, abilities, cultures, religions, citizenship types, marital status, job classifications, veteran status types, and socioeconomic status are encouraged to apply.

To be eligible, principal investigators (PIs) must be affiliated with an academic institution, research laboratory, or other institution with a research or science-based mission in Pennsylvania, including non-profit organizations and state agencies. Co-Principal Investigators (Co-PIs) on projects can be from institutions outside of Pennsylvania. *NOTE: Only one preliminary proposal per lead Principal*

Investigator may be submitted but may be listed as a Co-PI on as many preproposals as they desire. Direct salary support for individuals from federal agencies, Tribal, and for-profit and foreign organizations is not allowed; however, non-federal contributions can be counted as matching or in-kind support for the project.

Single investigators and multiple investigator research teams from different institutions are encouraged to apply. Pennsylvania Sea Grant extension personnel are welcome to serve as Co-PIs or senior personnel. The Pennsylvania Sea Grant College Program encourages participation from the broad science and social science research community within Pennsylvania and invites participation by investigators new to the Pennsylvania Sea Grant RFP process. Pennsylvania Sea Grant particularly encourages submissions that support students (graduate or undergraduate), post-doctoral researchers, and/or early career scientists.

Demographics Question

To better understand the diversity of our research applicants, the National Sea Grant Office is asking investigators to provide the following information voluntarily at the full proposal stage for all named collaborators on your proposal (2022, OMB approved for PRA under DOC generic clearance information collections, 0690-0030 and 0690-0035). You may use [this optional form](#) to submit your information. This questionnaire will be separated from the application and will not be used in any review decisions.

Do you or your organization identify with any of the following groups that the federal government, in Executive Order 13985, has identified as underserved? Check all that apply.

- a) Black
- b) Latino
- c) Indigenous and/or Native American
- d) Asian American
- e) Pacific Islander
- f) Other person of color
- g) Members of religious minorities
- h) Lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons
- i) Persons with disabilities
- j) Persons who live in rural areas
- k) Persons otherwise adversely affected by persistent poverty or inequality
- l) No, I do not identify with any of these groups

4.0 SCHEDULE AND SUBMISSION INSTRUCTIONS

Preliminary and Full Proposal Schedule

- Request for Pre-proposals released – **January 5, 2023**
- Informational webinar ([register here](#)) – **January 12, 2023**
- Pre-proposals due – **February 22, 2023 by 5:00 PM, EST**
- Requests for full proposals issued – **March 22, 2023**
- Full proposals due – **June 7, 2023 by 5:00 PM, EDT**
- Full proposal selection, PIs notified – **September 30, 2023**
- Full proposals submitted to NOAA – **October 31, 2023**
- Funding decisions announced – **January 2024**
- Funding available/Project start – **February 1, 2024**
- Project completion – **January 31, 2026**

Pre-proposal Submission Instructions

You must submit your pre-proposal (non-scanned .PDF format) to Research Director, Sean Rafferty, via email at srafferty@psu.edu. Use subject line: Pennsylvania Sea Grant Pre-Proposal (2024-26). **The deadline is February 22, 2023 at 5:00 PM, EST. Pre-proposals received after the deadline will not be accepted.**

Full proposal Submission Instructions

Only applicants who submit a pre-proposal on time are eligible to submit a full proposal. You must submit your proposal (editable .PDF format) to Research Director, Sean Rafferty, via email at srafferty@psu.edu. Use subject line: Pennsylvania Sea Grant Full Proposal (2024-26). **The deadline is June 7, 2023 at 5:00 PM, EDT. Full proposals received after the deadline will not be accepted.**

5.0 PRE-PROPOSAL PREPARATION GUIDANCE

Pre-proposals should present a concise but sufficiently detailed synopsis of the project to evaluate its relevance to the Pennsylvania Sea Grant Strategic Plan, its technical feasibility, and the PIs' qualifications. Pre-proposals are not letters of intent and will be evaluated rigorously. **PIs must follow the instructions regarding pre-proposal components as explained in this document or risk pre-proposal rejection.**

Pre-Proposal Format

For general text, use 12-point Times New Roman font. Captions and labels may be smaller but should be legible. Use **single spacing**, left justified only, and one hard return between paragraphs. All margins should be 1 inch. The project narrative of the pre-proposal should be typed continuously (that is, do not start a new page for each new section). The *Literature Cited* should each start on a new page and is not included in the 3-page single-spaced limit required for the project narrative. The first page of the project narrative should be numbered 1, and numbering should continue throughout the narrative.

Pre-Proposal Components

Only pre-proposals submitted as a single non-scanned PDF document and contain the following components will be considered:

- Cover Page (one-page maximum)
 - ✓ project title
 - ✓ name, title, affiliation, and contact information of principal investigator
 - ✓ name, title, and affiliation of other co-investigators
 - ✓ watershed (Lake Erie, Susquehanna River, Delaware River, or other)
 - ✓ RFP focus area(s) (as specified in Section 2.0)
 - ✓ RFP priority topic
 - ✓ strategic plan goal(s) (refer to the [Pennsylvania Sea Grant 2024-27 Strategic Plan](#))
 - ✓ start and end date
 - ✓ funding request (Year 1; Year 2; total)
- Project Narrative (three-page maximum)
 - ✓ abstract
 - ✓ introduction/background/rationale
 - ✓ objectives
 - ✓ general approach and methods
 - ✓ anticipated results and outcomes
 - ✓ student opportunities
 - ✓ Literature Cited (not included in three-page maximum)
- Outreach Plan (one-page maximum)
- Budget Estimate (one-page maximum)
- Budget Narrative (two-page maximum)
- Principal Investigator and Co-investigator(s) CV (two-page maximum per CV)

Cover Page: Include the pre-proposal title and full contact information for the PIs/Co-PIs on the cover page. Include the watershed where the project will have relevance (Lake Erie, Susquehanna River, Delaware River, statewide). Include the RFP Focus Area (Environmental Literacy and Workforce Development, Healthy Coastal Ecosystems, Sustainable Fisheries and Aquaculture, Resilient Communities and Economies). Include the RFP Topic (refer to pages 3 and 4 the RFP). Include the strategic plan goal being addressed (refer to the [Pennsylvania Sea Grant 2024-27 Strategic Plan](#)). We do not require that pre-proposals be routed through campus' research administration or be signed, as no binding financial commitments are required. However, follow your home institution's guidance.

Project Narrative: The project narrative is limited to **three pages of single-spaced text and graphics**. Write your pre-proposal using the headings in the sequence listed in this document and following the formatting instructions above.

- *Abstract:* Briefly summarize the proposed project objectives, methodologies, and rationale clearly and concisely. Emphasize the importance, relevance, application, and value to Pennsylvania Sea Grant constituents. Limit the abstract to 300 words.
- *Introduction/Background/Rationale:* Indicate the specific problem addressed by the proposed effort and provide sufficient background information to allow a preliminary assessment of the relationship of the problem to the research questions posed in this RFP.
- *Objectives:* State the objectives of the research effort as they would appear in a full proposal. Research hypotheses, if relevant, should be clearly stated.
- *General Approach and Methods:* You need not explain methods in detail. However, readers should be able to make a preliminary determination of the appropriateness of the proposed approach, including statistical analyses, for achieving the stated objectives.
- *Anticipated Results and Outcomes:* Briefly explain the anticipated results and potential implications of those results in relation to Pennsylvania Sea Grant program goals.
- *Student Opportunities:* Explain how undergraduate and graduate students will be involved with the proposed project. Given that Pennsylvania Sea Grant supports research, education, and extension activities, we encourage submissions that support students (graduate or undergraduate).
- *Literature Cited:* List references on a separate page. Reference pages are not included in the three-page maximum for the project description.

Outreach Plan: The outreach plan is limited to **one page**. Community engagement and societal relevance are critical to all Sea Grant efforts. Each proposal submitted to Pennsylvania Sea Grant must include a detailed outreach plan that clearly describes how the proposed research will link to policy, management decisions, and/or behavior change; how broader audiences can use and benefit from anticipated results; and how the results of the study will be translated for end-users outside of scientific peers. Research projects that offer benefits and societal impacts to coastal communities, including those with stakeholders from under-represented or under-served groups, are strongly encouraged. A strong outreach plan should define the target audience(s), the rationale for choosing the target audience(s), planned activities with the target audience(s), and how the effectiveness of the outreach plan will be evaluated. **Refer to Section 9.0 for further extension and outreach guidance.**

Budget Estimate: The project budget estimate is limited to **one page**. The pre-proposal budget estimate is a non-binding statement of your yearly and total funding request. Please provide in this section your estimated budget by year with major categories (salaries and wages, fringe benefits, permanent equipment, expendable supplies and equipment, travel, publication and documentation cost, other costs, and indirect costs). **Be sure to include your non-federal match commitment.** The budget should include funds to support the proposed extension and outreach plan that are consistent with the anticipated level of effort. Substantial (>10%) deviations from the pre-proposal budget estimate at the full proposal stage are discouraged without prior consultation with Pennsylvania Sea Grant. Further, Pennsylvania Sea Grant recognizes that this pre-proposal budget estimate is not a commitment on behalf of your institution. **Please note that at the full-proposal stage, total budget must be distributed equally over the two years.** You may use the [NOAA 90-4 Budget Form](#) to construct your yearly budgets (the 90-4 will be required at the full proposal stage).

Important Notes for Principal Investigators Regarding Match

- Federal law requires that Pennsylvania Sea Grant provide a minimum **non-federal cost share** (match) of at least 50% (\$1 for every \$2 of federal funds it receives). For all awards made through this solicitation, cost share is the applicant's responsibility. Cost share sources must be clearly identified, and projects selected for funding will be required to provide documentation that supports the funds claimed on each invoice submitted. Cost share must be expended during the same time as the project and may be provided as cash or from acceptable in-kind resources. Examples of cost share or matching sources include non-federally supported salaries wages and benefits of those working on the project; expendable supplies and equipment; ship time; donated volunteer time (calculated at a reasonable hourly rate); supplies; space or equipment; tuition waivers for students involved in the project; and unrecovered indirect costs. Matching funds do not necessarily have to come from the PIs' home institution. Foundation, state or local grants, and other non-federal funds, including funds from private and/or industry sources, are eligible sources of matching funds if documented approval is provided at the time of application from those sources.

Budget Narrative: The project narrative is limited to **two pages**. The budget narrative is a line-by-line explanation of each category of funding (salaries and wages, fringe benefits, permanent equipment, expendable supplies and equipment, travel, publication and documentation cost, other costs, and indirect costs) requested on your budget page. Include the breakdown of calculations used to arrive at the amount in each line of your budget, including match.

Principal Investigator and Co-investigator(s): Include Curriculum Vitae for the PI and Co-PIs. CVs are not to exceed two pages per investigator.

6.0 PRE-PROPOSAL REVIEW PROCESS

Pennsylvania Sea Grant will review all pre-proposal applications to ensure completeness and compliance with proposal formatting and other preparation and submittal instructions. If a pre-proposal does not adhere to these instructions, it may not move forward to the technical review. Pennsylvania Sea Grant College Program management staff, ensuring absence of conflict of interest, will conduct a technical review of all pre-proposals. Pennsylvania Sea Grant advisory board members may also participate in the review of pre-proposals. Pre-proposals will be evaluated based on the below criteria. The Pre-Proposal Review Form can be downloaded from the [Research Form Section](#) of the Pennsylvania Sea Grant website.

- Relevance to program focus areas, goals, and RFP priorities
- Scientific merit
- Outreach plan
- Student involvement
- Investigator(s) qualifications
- Budget and justification

After the review process is completed, Pennsylvania Sea Grant will contact all PIs who have submitted pre-proposals. Those PIs whose pre-proposals review favorably will be encouraged to submit full proposals. Regardless of the feedback, all investigators submitting a pre-proposal are welcome to prepare and submit a full proposal. Pennsylvania Sea Grant recognizes that the development of full proposal applications can be a significant time investment on the part of the prospective investigator(s). Decisions to encourage or not encourage are based on pre-proposal reviews, expected funding levels, and diversity of topics; and are designed to minimize extra work for potential applicants. Comments from the pre-proposal review process will be sent to all applicants who submitted a pre-proposal. Prospective PIs are strongly recommended to consider and address any comments as they develop their full proposal application.

7.0 FULL-PROPOSAL PREPARATION GUIDANCE

Only applicants who submit a pre-proposal on time are eligible to submit a full proposal. Applicants will receive an email encouraging or not encouraging full proposal submission. Comments from the pre-proposal review process will be sent to all applicants who submitted a pre-proposal. Prospective PIs are strongly recommended to consider and address any comments as they develop their full proposal application. **PIs must follow the instructions regarding full proposal components as explained in this document or risk proposal rejection.**

Full Proposal Format

For general text, use 12-point Times New Roman font. Captions and labels may be smaller but should be legible. **Use single spacing**, left justified only, and one hard return between paragraphs. All margins should be 1 inch. The project narrative of the proposal should be typed continuously (that is, do not start a new page for each new section). The first page of the project narrative should be numbered 1, and numbering should continue throughout the narrative.

Full Proposal Components

Only full proposals submitted as a single, non-scanned PDF document and contain the following components will be considered:

- Full Proposal Cover Sheet
- Project Summary Form (90-2)
- Abstract
- Project Narrative (12-page maximum)
 - ✓ Introduction (Background and Relevance, and Objectives)
 - ✓ Project Approach and Methodologies
 - ✓ Anticipated Benefits
 - ✓ Deliverables
 - ✓ Project leadership and personnel
 - ✓ Institutional capacity and partners/collaborators
 - ✓ Student Support
 - ✓ Project milestone chart
- References
- Outreach Plan (two-page maximum)
- Project Budget Form (90-4)
- Budget Justification (two-page maximum)
- Data Management Plan (two-page maximum)
- Abbreviated Environmental Compliance Questionnaire
- Summary of accomplishments based on previous Sea Grant funded projects
- Current and pending support
- Potential Reviewers
- Demographics Question

- Investigator CVs (two-page maximum per CV)

Full Proposal Cover Sheet: Principal Investigators are responsible for routing the proposal through their research administration and for obtaining all required institutional endorsements prior to submitting. You may use your own campus signature form or Pennsylvania Sea Grant's template. The Cover Page Template can be downloaded from the [Research Form Section](#) of the Pennsylvania Sea Grant website.

Project Summary Form (90-2): Complete and include the Pennsylvania Sea Grant proposal summary form (90-2), which is used by all Sea Grant offices as a record of each Sea Grant proposal submitted. The 90-2 can be downloaded from the [Research Form Section](#) of the Pennsylvania Sea Grant website.

Abstract: The abstract must contain a summary of the proposed activity suitably written for dissemination to a non-scientific audience. The body of the abstract (maximum 300 words) should include a brief description of the project, the overall goals of the project, methods to be employed, and anticipated impacts of the project (i.e., benefits, outcomes). This section must not include any proprietary or sensitive business information as the Pennsylvania Sea Grant College Program will make it available to the public upon announcement of awards.

Project Narrative (12-page maximum): The project narrative contains the description and graphical components of the proposal. Your proposal should use the following headings in the order listed. A **12-page limit** applies to the narrative and includes any tables and figures. Failure to adhere to these guidelines is grounds for return without review.

Background and Relevance: This is the introduction to your proposal. Readers should obtain a complete understanding of the context in which the effort is being proposed, its direct connection to focus areas in the RFP, its relevance to Pennsylvania Sea Grant's strategic plan goals, and the nature of the specific problem being addressed. This section should also demonstrate your familiarity with previous and ongoing work relevant to the proposed effort.

Objectives: Provide a general description of the project. State the objective(s) and/or hypothesis(es) of your proposed effort and the objectives for each year of funding.

Project Approach and Methodologies: This section should outline the methodologies, techniques, or actions for achieving each of the project objectives. Describe the experimental designs, techniques, and analyses to be used. Be specific. Include an explanation of how the data will be analyzed using appropriate statistical and/or graphical procedures. If appropriate, include a labeled site map. Provide a description of major project components and outputs.

Anticipated Benefits: Describe the outcomes of the project and implications of the anticipated results. This section should respond to questions such as:

- What will be the immediate products and outcomes from the project?
- How does this research advance this field of science?
- Who will use this information or the products developed from it?
- What are the future applications of the proposed work?

- How might the results of this research be applied to the management of Pennsylvania’s coastal environment and its resources?

Deliverables: PIs are required to track their progress and report annually on information, products, and services rendered as a result of their work. Project deliverables include academic products, outreach products, presentations, workshops, tools, etc. Some of these deliverables will be tracked as performance measures.

Project leadership and personnel: Briefly describe how the project will be managed and the role that each person (PIs, Co- PIs, other senior personnel, graduate students, etc.) will be conducting in the project.

Institutional capacity and partners/collaborators: List and describe the purpose/role of the project partners involved in the research or outreach components of the proposal such as industry, agencies, and/or other organizations. List all facilities and/or equipment available and/or necessary for the project.

Student support: Describe how this project will provide research opportunities for students. Please include the number and type of students (undergraduate, MS/MA, PhD, or other).

Project milestone chart: Each proposal must include a project milestone chart that outlines each proposed year of funding. A milestone is a point at which an accomplishment is made or a decision reached with respect to executing the project.

References: Provide complete bibliographic information for all references cited in the text

Outreach and Communications Plan (two-page maximum): The outreach plan is limited to **two pages**. Community engagement and societal relevance are critical to all Sea Grant efforts. Each proposal submitted to Pennsylvania Sea Grant must include a detailed outreach plan that clearly describes how the proposed research will link to policy, management decisions, and/or behavior change; how broader audiences can use and benefit from anticipated results; and how the results of the study will be translated for end-users outside of scientific peers. Research projects that offer benefits and societal impacts to coastal communities, including those with stakeholders from under-represented or under-served groups, are strongly encouraged. A strong outreach plan should define the target audience(s), the rationale for choosing the target audience(s), planned activities with the target audience(s), and how the effectiveness of the outreach plan will be evaluated. **Refer to Section 9.0 for further outreach and communications guidance.**

Project Budget Form (90-4): Submitted on three separate Sea Grant 90-4 budget forms (Year 1, Year 2, and combined). Matching funds are required for this solicitation. Applicants must include a non-federal contribution of at least one non-federal dollar for every two dollars of federal support requested. The 90-4 can be downloaded from the [Research Form Section](#) of the Pennsylvania Sea Grant website. Investigators are required to provide the negotiated federal indirect costs rate agreement for their home institutions.

Refer to Section 5.0 (Pre-proposal guidance) of this RFP for more information related to matching funds.

Budget Justification (two page maximum): Every dollar included in a budget category on your 90-4 must be described in a budget justification, reflecting Sea Grant funds requested and non-federal matching support funds. On separate pages, provide a line-by-line explanation of each category of funding requested on your budget page for each year. Include the breakdown of calculations used to arrive at the amount in each line of your budget. Subcontractors must also provide their own budget justifications for each year. A 50-percent non-federal cash and/or in-kind match is required for all proposals (e.g. a \$100,000 project must have a minimum match of \$50,000). For indirect costs (F&A) a current copy of your Federal F&A negotiated rate agreement is required. If a sub-awardee is included in project, provide a detailed project summary and budget.

Data Management Plan (two-page maximum): The National Oceanic and Atmospheric Administration requires that all environmental data from funded projects be archived and made publicly available, typically within two years of creation and consistent with federal and university policies. To be considered for Sea Grant funds, researchers should outline how their data will be shared and maintained in perpetuity. If a project does not generate environmental data, note this in your Project Summary. The Proposal Data Management Form can be downloaded from the [Research Form Section](#) of the Pennsylvania Sea Grant website.

Environmental data are recorded and derived observations and measurements of the physical, chemical, biological, geological, and geophysical properties and conditions of the oceans, atmosphere, space environment, sun, and solid earth, as well as correlative data, such as socio-economic data, related documentation, and metadata. Media, including voice recordings and photographs, may be included. Numerical model outputs are included in this definition, particularly if they are used to support the conclusion of a peer-reviewed publication. Data collected in a laboratory or other controlled environment, such as measurements of animals and chemical processes, are included in this definition.

Abbreviated Environmental Compliance Questionnaire: All proposals recommended for funding by Pennsylvania Sea Grant must complete and submit a NEPA Environmental Compliance Questionnaire for review by NOAA as part of the acceptance process. The NEPA Form and associated guidance can be downloaded from the [Research Form Section](#) of the Pennsylvania Sea Grant website.

Summary of accomplishments based on previous Sea Grant funded projects: Investigators who have been funded by Pennsylvania Sea Grant since 2012 are requested to submit a summary of the accomplishments of their previous Pennsylvania Sea Grant funded research. Information on research findings and publications, outreach efforts, and students supported as part of the research should be highlighted. Details of how previous work may be relevant to the current proposal should also be provided.

Current and pending support: Specify projects in which PIs and Co-PIs are currently involved that are funded by Sea Grant programs and other agencies, or are under consideration for such funding, including the proposal being submitted to this competition. The total award amount for the entire award period

covered (including indirect costs) must be shown as well as the number of person-months per year to be devoted to the project, regardless of source of support.

Potential Reviewers: Provide a list of five individuals from **outside** Pennsylvania that are knowledgeable and competent in your field of inquiry. Please note that the Pennsylvania Sea Grant College Program is under no obligation to use any of the reviewers submitted by the respective applicants for funding, and all reviewers are screened for conflicts of interest with all proposed researchers. Include name, organization, email, and phone number.

Demographics Question: Do you or your organization identify with any of the following groups that the federal government, in Executive Order 13985, has identified as underserved? Check all that apply. You may use [this optional form](#) to submit your information.

- a) Black
- b) Latino
- c) Indigenous and/or Native American
- d) Asian American
- e) Pacific Islander
- f) Other person of color
- g) Members of religious minorities
- h) Lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons
- i) Persons with disabilities
- j) Persons who live in rural areas
- k) Persons otherwise adversely affected by persistent poverty or inequality
- l) No, I do not identify with any of these groups

Investigator CVs (two-page maximum per CV): Include Curriculum Vitae for the PI and Co-PIs. CVs are not to exceed two pages per investigator.

8.0 FULL-PROPOSAL REVIEW PROCESS

Pennsylvania Sea Grant will conduct an administrative review of all full proposals to ensure completeness and compliance with proposal preparation and submittal instructions. If a full proposal does not adhere to these instructions, it may not move forward to the technical review. After receiving administrative approval, all full proposals will receive written external peer reviews by at least three external reviewers ensuring absence of conflict of interest. Full proposals will be reviewed based on the below criteria. The Full-Proposal Review Form can be downloaded from the [Research Form Section](#) of the Pennsylvania Sea Grant website.

- Rationale and relevance to program focus areas, goals, and RFP priorities
- Scientific and technical merit
- Innovativeness
- Appropriateness of the methodology
- Benefit and applicability of potential results
- Principal investigators' expertise and publication record
- Potential for successful completion of the work within the proposed budget and timeframe
- Thoughtful, strategic outreach plans
- The degree to which students are incorporated into the project

Following written peer review, a technical panel composed of a minimum of two external panelists will discuss and review each proposal individually. Based on the expert panel's review and external written reviews, the expert panel will recommend a set of proposals for Pennsylvania Sea Grant to consider for funding. Depending on funding constraints and reviewer comments, Pennsylvania Sea Grant may ask PIs to revise their proposed budgets and scope of work.

The panel ranking is advisory to the director of Sea Grant. The Sea Grant director will conduct a final review of proposals and has final discretion to select proposals to fund based on panel recommendations, technical reviews, availability of funds, and specific programmatic priorities, which include having a diverse and inclusive portfolio of awards across institutions, research topics, strategic focus areas, program needs, and investigators. While unusual, the Director may choose not to accept some recommendations from the panel review for the reasons described above; any such deviation will be justified by the Director based on the reasons described above. Pennsylvania Sea Grant will seek concurrence of the program's intended decisions and corresponding rationale by submitting a Letter of Intent (LOI) to the National Sea Grant Office Program Officer. Full proposals that are recommended for funding will be forwarded to the National Sea Grant Office for final funding approval, which is contingent upon available Federal funds. Upon submission of full proposals, applicants agree to accept the decision of the National Sea Grant Office as final. Applicants will be notified of their selection status upon approval from the National Sea Grant Office, anticipated in October 2023, which will include feedback on their proposal consisting of peer review and technical and panel review comments.

9.0 OUTREACH AND COMMUNICATIONS GUIDANCE

A staple of the Pennsylvania Sea Grant College Program is funding research that meets the needs of stakeholders in the communities we serve. Research proposals featuring strong research accompanied by meaningful stakeholder engagement and extension components will be considered more competitive. In their research proposals, principal investigators should articulate and justify the anticipated benefits of the research to be undertaken and to various “end users” of the information or technologies developed. Very few end users will read the journal articles or attend professional meetings. Hence, outreach must employ creative and unique, appropriate vehicles to convey the information to them in a readily understandable manner. There are many different tools that can be used if there is a clear audience and a logical outcome from the research effort.

An outreach plan should describe how specifically audiences, including traditionally underserved audiences, will learn about research outcomes so that they can use the information when making decisions about coastal resources and policy. The outreach plan describes what types of products will be created to communicate results and how the targeted audiences will get the information. In addition, the plan should state, within reason, the proposers’ prediction of the impact of their research and outreach effort. For example:

- Will managers be able to make a better decision regarding a specific issue?
- Will a new method to manage a specific problem be developed?
- Will a key group have new tools to address an important issue pertaining to ecosystem-based management?

In preparing an outreach plan, use the questions below to help identify potential engagement directions and opportunities.

- What new knowledge/tool will result from your project?
- Why is this knowledge/tool needed?
- Who could use that knowledge (aside from other scientists) and what would they use it for (e.g. decision making, improving practices, increasing profitability, reducing risk, etc.)?
- Do you have some information indicating that the knowledge resulting from your project is needed or desired by the intended end users or by stakeholders?
- What would it take for the end users to apply that new knowledge/tool?
- If end users were able to apply the new knowledge/tool that resulted from your work, would there be an improvement in social, economic or environmental conditions?

Investigators are strongly encouraged to contact Pennsylvania Sea Grant extension, communications, or education staff in the early stages of pre-proposal development to discuss potential collaborations, outreach approaches, and audiences. Other outreach partners may be engaged if the proposal does not fit the expertise or availability of Sea Grant staff. Engaging with extension staff or outreach partners early in the proposal preparation process increases the likelihood that they will be able to contribute value to the project and/or commit time and effort if needed. The level of effort required and/or availability of other funding help determine whether salary funds will be needed from the proposed project for extension staff. Sea Grant staff may contribute to projects or direct you to other appropriate partners. Engage extension and outreach staff early as they may:

- have access to needs assessments of the end users for whom you may be interested in providing information, knowledge or tools;
- have access to audiences, stakeholders, volunteers or citizen scientists important for your work;
- have outreach venues and opportunities already in place that would work for you;
- know willing partners for demonstration projects, pilot projects or collaborative research;
- be familiar with social science associated with successful implementation of new knowledge in your field; or
- help you locate more appropriate engagement partners if Extension is not the right partner.

A list of Pennsylvania Sea Grant extension, education, and communication staff who may be able to assist with outreach plans is available on the [Pennsylvania Sea Grant website](#).

10.0 Award Administration Information

Notification of the award

Pennsylvania Sea Grant makes notification of the award to the applicant. Applicants whose proposals are declined will be advised as promptly as possible. We anticipate notifying applicants of our decision to recommend their project for funding in October 2023. Anonymous copies of reviews will be provided to all applicants. We anticipate issuing funds for Year One of awards in February 2024 and Year Two in February 2025. Awards for both Year One and Year Two are contingent upon NOAA approval and congressional appropriation of funds.

Reporting requirements

As part of all award agreements, Pennsylvania Sea Grant requires mandatory annual progress reports and a final report to evaluate the project. Annual reports will be due on January 31 of each year, regardless of the project start date. Final reports will be due within 60 days of the project end date. Grant money may be withheld pending completion of reports as outlined in the project terms and award conditions.

Invoicing requirements

Pennsylvania Sea Grant requires the submission of mandatory quarterly invoices and a final invoice to monitor spending. Quarterly invoices will be based on the federal fiscal year, regardless of the project start date (February 1 - April 30, May 1 – July 31, August 1 – October 31, and November 1 – January 31) and must be submitted within 30 days of the end of each period. Final invoices must be marked “FINAL” and are required within 60 days of the project end date.

An invoice template will be provided which will allow expenses to be documented in each budgeted category, including the current period, as well as cumulative spending. The invoice will also document the associated cost share for both the current and cumulative time periods. Expenses and cost share should follow the budgeted categories from approved proposal submission. If no expenses are incurred for a period, a zero-balance invoice should be submitted.

Invoices should be submitted to Fiscal Officer, Shelley Readel, at sreadel@psu.edu.

11.0 CONTACTS AND ADDITIONAL INFORMATION

For further information about this RFP, please contact:

- Sean Rafferty, Research Director, Pennsylvania Sea Grant College Program:
Email: srafferty@psu.edu; Phone: 814-898-7082

A list of Pennsylvania Sea Grant staff can be found on the [Contact Us Section](#) of the Pennsylvania Sea Grant website.

The Pennsylvania Sea Grant College Program is a partnership between the National Oceanic and Atmospheric Administration (NOAA), the Pennsylvania State University, and the Commonwealth of Pennsylvania. To learn more about Pennsylvania Sea Grant's mission, previously funded research, or other funding opportunities, visit <https://seagrant.psu.edu>.