PIER Project Summary Classifications

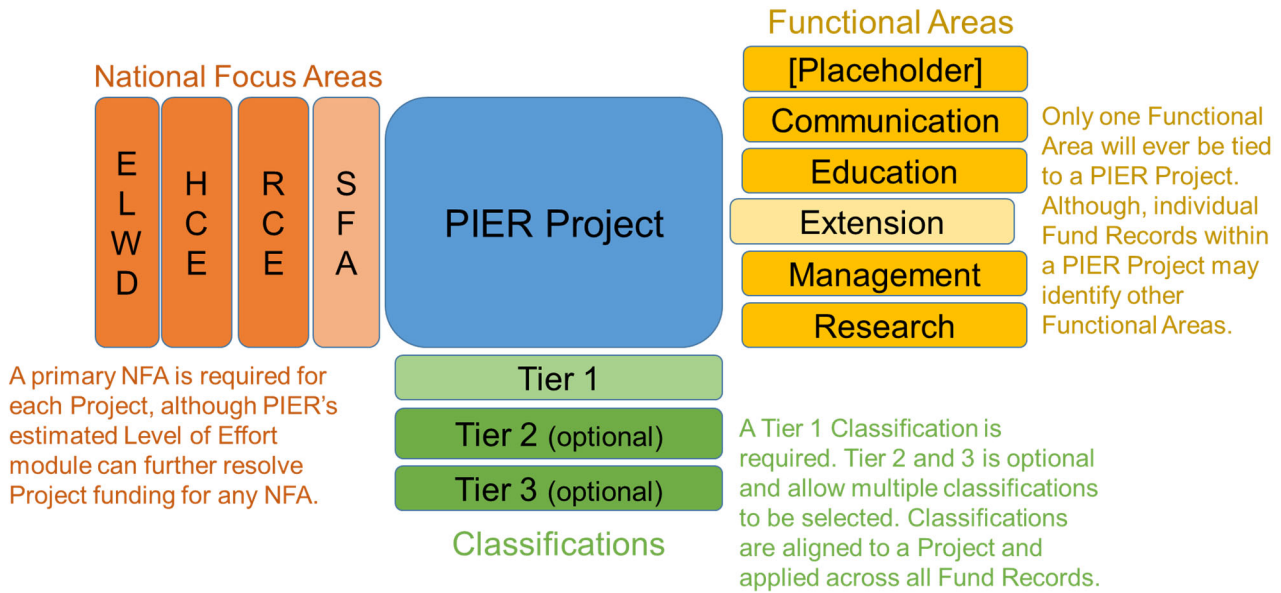**Final Version – August 2021**

Through the Planning, Implementation, and Evaluation Resources (PIER) system, Sea Grant categorizes its work and investments through several different, yet interrelated classifications: National Focus Areas (NFAs), Functional Areas, and Classifications. This guidance document provides a revised compilation of Classifications, but also broader context with respect to National Focus Areas (NFAs) and Functional Areas.

Classifications

Classification codes were originally created to categorize and track investments that were aligned to Sea Grant's 1995 strategic plan. Prior to this revision, there existed 110 codes, with 23 overarching "topical" categories. The quantity and overlapping interpretation of codes made it difficult for Sea Grant awardees to consistently select the appropriate "Primary" classification code, a required data component of the 90-2 Project Summary Form. Additionally, our business rules allowed for multiple classification codes to be selected, which creates a conflicting purpose for codes to be used as keyword search terms and exclusive categories of investments (i.e., Primary classification codes). Classification codes also suffered from a lack of definitions.

To address these issues, the following changes have been made:

- Classifications have been reduced from 110 to 28 (unique) categories, defined, and now also consist of three tiers. The multiple tiers are intended to enable the ability to: track relative investments across major topical areas, and categorize a range of activities. The tiers are described as:
    - Tier 1 (Required in 90-2 Form). Major topical areas of investment. Single-select.
    - Tier 2 (Optional). Specific sub-topical areas of current interest that Sea Grant wishes to track, and are not necessarily congressional directives. Multiple-select (up to three).
    - Tier 3 (Optional). Cross-cutting "disciplines" that are not intended to be exhaustive. Multiple-select (unlimited).

- When reasonable, Tier 2 "sub"-topical area classifications have recommended alignment(s) with Tier 1 Classifications. Such alignment has not been made for NFAs. This is to avoid confusion that only one NFA can correspond to a Project Record – which is not true. Multiple NFAs can align with a Project Record via PIER's Estimated Level of Effort module.

- Allocation by classification code will continue to not be a component of program evaluation, unlike NFA designation which is used to help determine merit funding.

- Sea Grant will review Classifications on a cyclical basis, likely more often for Tier 2 Classifications, which are meant to track topics of current interest.

- The alignment of Classifications to a PIER Project Record, NFAs, and Functional Areas is described in the proceeding visual.

National Focus Areas

Functional Areas

| E L W D | H C E | R C E | S F A | PIER Project |

[Placeholder]
Communication
Education
Extension
Management
Research

Only one Functional Area will ever be tied to a PIER Project. Although, individual Fund Records within a PIER Project may identify other Functional Areas.

A primary NFA is required for each Project, although PIER's estimated Level of Effort module can further resolve Project funding for any NFA.

Tier 1
Tier 2 (optional)
Tier 3 (optional)
Classifications

A Tier 1 Classification is required. Tier 2 and 3 is optional and allow multiple classifications to be selected. Classifications are aligned to a Project and applied across all Fund Records.

National Focus Areas (NFAs)

NFAs are defined in the National Sea Grant College Program's Strategic Plan as, "Areas of emphasis that are shaped to address the nation's most urgent ocean, coastal, and Great Lakes needs," which functionally cover all subject matters related to coastal, great lakes, and ocean science. NFAs are required to align with an individual program's Strategic Plan per PIE guidance. Therefore, through each program's strategic plan, NFAs provide the framework for annual reports and quadrennial program reviews. NFAs also provide the conceptual framework for several of Sea Grant's metrics and performance measures, which are utilized for external communication (e.g., "By the Numbers" and "State of Sea Grant: Biennial Report to Congress").

Functional Areas

Functional Areas are considered as overarching "types" of work in which Sea Grant considers its investments. Functional Areas (PIER Project ID Pre-Fixes) include: Communication (C/), Education (E/), Extension and Advisory Services (A/), Management (M/), Placeholder (P/), and Research (R/), but are not formally defined in a consistent manner. "Future Competed Projects" should be given a project ID number that begins with "P/" (for Placeholder) and are the only projects that should be given a "P/" project ID.

Classification - Tier 1. Major topical areas of investment. To enable consistency in reporting financials and no overlap of funds, only one can be selected per Project.

Title	Definition
Aquaculture	Activities that support the creation and application of aquaculture products, tools, and services which foster a sustainable U.S. marine and Great Lakes aquaculture industry, as well as support tribal aquaculture activities. Such areas of work include aquaculture commerce, communication, education, permitting and policies, current and emerging species, and production systems. This classification does not consider specific activities directed at the safety and quality of seafood products, which would include aquaculture products.
Fisheries	Activities that seek to advance the sustainable management of fisheries. Such areas of work include: ecosystem-based fisheries management, impacts of climate change, and efforts to support the development and continuance of local, tribal, state, and national economic activity from fisheries, including workforce development. This classification does not consider specific activities directed at the safety and quality of seafood products, which would include fisheries products.
Seafood Products, Quality, and Safety	Activities that involve research, technical assistance, education, and outreach to seafood producers, resource managers, scientists, and consumers, and focus on: product development and/or ensuring the safety and quality of sustainably caught and cultured seafood products to meet public demand. This classification is recommended for Integrated Aquaculture and Fisheries activities, as long as the activity still meets this definition scope.
Coastal Recreation and Tourism	Activities that support coastal and Great Lakes recreation, such as sport-fishing, and tourism, through activities such as business and community tourism management, workforce training, economic analysis, environmental stewardship, and recreational safety programs.
Coastal Zone and Offshore Development, Use and Planning	Activities that involve the sustainable development and use of the coastal zone and offshore waters, which include, but are not limited to built commercial and residential infrastructure, ports and harbors, and offshore wind development, as well as education, assistance, and coordination for improved coastal management decisions. This classification is more aligned to "gray" infrastructure within the coastal zone, compared to the environmental protection, restoration, and conservation of coastal habitats, which is preferably classified as "Ecosystem Structure, Function, and Services" (Tier 1) and "Restoration and Conservation" (Tier 2), depending on the scope of work. This classification includes the assistance and coordination for improved coastal management decisions.
Natural and Anthropogenic Hazards	Activities that seek to better educate, understand, and mitigate the impact of natural or anthropogenic hazards that are stochastic in nature. This includes, but is not limited to severe storms (e.g., flooding or cyclonic events), earthquakes, tsunamis, or human-caused spills (oil or other). This classification differs from the study and mitigation of chronic hazards, such as coastal inundation and shoreline erosion, which are considered in Coastal Zone and Offshore Development, Use and Planning.
Ecosystem Structure, Function, and Services	Activities that seek to holistically address coupled interactions between organisms and their environment, which ultimately form an ecosystem's unique structure and function (e.g., food web modeling, population dynamics). This classification also includes the study and dissemination of ecosystem benefits, which are benefits that people obtain from their ecosystems. Such services may be regulating (climate or water resilience, such as living shorelines) or supporting (soil formation) in nature, as well as cultural services, aesthetics, conservational stewardship, and traditional knowledge. Provisioning services are more likely considered within Seafood Products, Quality, and Safety, unless an activity is assessing multiple ecosystem services.

Water Infrastructure	Activities that seek to understand and address the functions, vulnerabilities, and costs associated with water storage, conservation, transport, and treatment to develop and maintain sustainable water infrastructure. This includes, but is not limited to: treatment systems, hydropower and dams, groundwater (aquifer recharge, depletion, contamination), green infrastructure, and stormwater management. This classification does not include offshore wind energy, which is considered in Coastal Zone Development and Planning.
Water Quality	Activities that seek to understand, educate, prevent, and mitigate the effects impaired water quality to protect human health, communities, and ecosystems. Water quality parameters include, but are not limited to: nutrients, temperature, salinity, oxygen, sediments, toxics (harmful algal blooms or heavy metals), microbial or biological, marine debris.
Environmental Science and Literacy	Activities that seek to improve overall public awareness and scientific understanding of the socio-economic and ecological impacts and resiliency of changing ocean, coastal, and Great Lakes environments for the purpose of making informed, responsible decisions and taking action. Activities may be focused on building literacy across any number of topics, primarily with Pre-K – 12 participants, but not exclusively. These activities occur in formal (e.g., classrooms) and informal settings (e.g., boats, science centers, day camps, etc.). This classification includes research in this area. This code is only used if an activity and/or product does not truly fit into another classification.
Integrated Workforce Development	Activities that seek to create a diverse workforce trained in marine science, technology, engineering, mathematics, law, and policy. This classification includes career awareness at the elementary level, exploration and preparation activities at the secondary level, and field experiences and internships at the post-secondary level, all of which illuminate career pathways and develop key skills needed in ocean, coastal, and Great Lakes-related careers. These activities occur in formal and informal settings and build knowledge, attitudes, and skills important across a range of topics.
Environmental and Bio-Technology	Environmental technology refers to the specific development and/or demonstration of technologies for advancing environmental-assessment capabilities, which may apply to fisheries, aquaculture, water quality, etc., and/or technologies which enhance the management of natural resources (e.g., water purification). Biotechnology refers to activities in which the main objective is the utilization of biological systems to develop products, which includes most non-food marine products (e.g., macroalgae-derived pharmaceuticals). The focus of this work is the technological testing and development process, and includes exploration of environmental monitoring and biotechnology for K - 16 learners and educators.
Administrative and Unclassified Activities	Activities that cannot be aligned with a specific classification, which will most often be for Management, Communication, and Placeholder records. Although this can also be used for crosscutting and interdisciplinary activities specific to each functional area that cannot be well-delineated, such as administration of competitive research, extension, and education.

Classification - Tier 2. Specific sub-topical areas of current interest that Sea Grant wishes to track, and are not necessarily congressional directives. Multiple-select (up to three). Recommended Tier 2 ⭢ Tier 1 alignments are provided, when reasonable.

Title	Definition	Tier 1 Alignment (Recommended)
Aquatic Invasive Species	Activities which seek to prevent the introduction and dispersal of aquatic invasive species (AIS), and to better understand their current or potential ability to disrupt and/or threaten natural resources and ecology.	Ecosystem Structure, Function, and Services
Aquaculture Education and Communications	Activities focused on effectively educating and communicating the results and impacts of aquaculture projects to key constituencies and partners involved in the aquaculture industry.	Aquaculture; Seafood Products, Quality, and Safety
Climate Mitigation and Adaptation	Activities which seek to improve coastal communities: awareness and knowledge of climate and weather (C&W) information resources, and decision support tools; capabilities to incorporate C&W information and mitigation and adaptation strategies into local plans and policies. Activities also include efforts to develop, enhance, and apply new and existing (C&W) decision-making protocols and practices.	>4 possible alignments, no specific recommendation.
Contaminants of Emerging Concern	Activities which further the identification, measurement, monitoring, mitigation, and prevention of emerging contaminants, which include, but are not limited to: pharmaceuticals, personal care or household cleaning products, industrial chemicals, and marine debris such as micro-fibers and -plastics.	Water Quality
Flood Resilience	Activities which seek to help communities be more prepared to respond to flooding through: enhanced planning and preparedness; policy design, evaluation, and implementation; utilization of existing natural areas and built green infrastructure; protection of built infrastructure and resilient infrastructure design; effective response and recovery following flood events.	Coastal Zone and Offshore Development, Use and Planning; Natural and Anthropogenic Hazards
Harmful Algal Blooms and Hypoxia	Activities focused on identifying the drivers of hypoxia and/or harmful algal blooms (that may be natural or anthropogenic, e.g., upwelling or excessive nutrient loading), development of monitoring strategies and prediction tools, and implementation of prevention and mitigation strategies.	>4 possible alignments, no specific recommendation.
Marine Safety	Activities, such as workshops, certified training, and informal education, that are directed at improving marine and Great Lakes safety, in both professional and recreational settings.	>4 possible alignments, no specific recommendation.
Ocean Acidification	Activities which seek to: understand the drivers, ecological responses, and socio-economic challenges driven by ocean, coastal, and Great Lakes acidification; monitor and predict the potential for environmental change; and empower communities to make informed decisions in managing their water resources, specifically with respect to acidification.	>4 possible alignments, no specific recommendation.
'Omics'-driven Science and Technology	Activities which specifically utilize next generation sequencing, (meta)genomics, (meta) transcriptomics, proteomics, metabolomics, and eDNA techniques, to address socio-economic and ecological challenges.	Environmental and Bio-Technology
Recreational Fisheries	Activities focused on the science, education, management, innovation, and partnership with recreational fishing industry and stakeholders.	Fisheries; Coastal Recreation and Tourism
Restoration and Conservation	Activities that involve restoration and conservation practices to improve the quality, and socio-economic and ecological resilience of natural resources.	>4 possible alignments, no specific recommendation.

Classification – Tier 3. Cross-cutting "disciplines" that are not intended to be exhaustive. Unlimited number of codes can be selected per Project. Please do not re-select Environmental Science and Literacy or Integrated Workforce Development if it was coded as such in Tier 1.

Title	Definition
Economic Science	Activities which utilize economic techniques and approaches to address how society/individuals use limited resources and deal with the production, distribution, and consumption of goods and services (Acknowledging here that economic science is considered as a component of the social sciences).
Social Science	Activities that involve social science, defined by the NOAA Science Advisory Board and used here, as the process of describing, explaining and predicting human behavior and institutional structures in interaction with their environments. (NOAA Science Advisory Board 2003)
Law and Policy	Activities that involve legal scholarship and outreach related to coastal and ocean law issues. This may involve: conducting research on current ocean, coastal, and Great Lakes law issues; providing outreach and advisory services to the Sea Grant network and coastal constituents; and disseminating information and analysis through periodic workshops and conferences as well as publications.
Environmental Science and Literacy	Activities that seek to improve overall public awareness and scientific understanding of the socio-economic and ecological impacts and resiliency of changing ocean, coastal, and Great Lakes environments for the purpose of making informed, responsible decisions and taking action. Activities may be focused on building literacy across any number of topics, primarily with Pre-K – 12 participants, but not exclusively. These activities occur in formal (e.g., classrooms) and informal settings (e.g., boats, science centers, day camps, etc.). This classification includes research in this area. This code is only used if an activity and/or product does not truly fit into another classification.
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Public Participation in the Scientific Process	Activities that utilize, implement, and teach "community," "citizen," or "participatory science" strategies. The phrase "Public Participation in the Scientific Process" is used here instead to enable a broader range of activities across functional areas, such as education and volunteer monitoring, and support an evolving terminology. This classification references a definition for "community science," as research and monitoring driven and controlled by local communities, and characterized by place-based knowledge, social learning, collective action, and empowerment (Charles et al. 2020).