

## Environmental Studies Program: Studies Development Plan | FY 2022–2023

Title	Facilitating Strategic Partnerships in Support of the Presidential Memo on Ocean Mapping, Exploration, and Characterization (NT-21-01)
Administered by	Headquarters
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Procurement Type(s)	TBD
Conducting Organization(s)	TBD
Total BOEM Cost	TBD
Performance Period	FY 2021–2023
Final Report Due	TBD
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PICOC Summary	
<i><u>Problem</u></i>	BOEM has contributed substantially to developing the 2019 Presidential Memorandum’s (PM) Section 2 National Strategy on Ocean Mapping, Exploring and Characterizing the U.S. Exclusive Economic Zone (NOMEZ). The PM calls on agencies to “act boldly” to implement its ambitious goals. BOEM’s Environmental Studies Program (ESP) has trailblazed with several successful, mission-driven partnerships focused on mapping, exploring and characterizing deepwater benthic environments. To maintain its first-in-class status, the ESP must continue leading and innovating in this domain.
<i><u>Intervention</u></i>	This funding vehicle will support the PM’s broad goals and several specific NOMEZ objectives in a cost-effective and timely way that addresses BOEM mission needs. Collaboratively developed, objective criteria will help ensure a fair and transparent submission/evaluation process that can be employed year-round to strategically support emerging opportunities and partnerships.
<i><u>Comparison</u></i>	The current Studies Development Plan process works well for most types of studies but has limitations, particularly in responsiveness to near-term partnership funding. For example, it cannot capitalize on short-notice opportunities such as unanticipated ship time availability. This vehicle provides a nimbler way for BOEM to capitalize on availability of partner funding for low-cost/high value partnerships, and also achieve cost savings by linking previously disconnected ESP studies with overlapping support needs.
<i><u>Outcome</u></i>	A standing, adaptable funding mechanism that can help (along with existing and new partners) fund necessary research involving <a href="#">vessels</a> , <a href="#">submersibles</a> , <a href="#">sensors</a> , and scientific staff in more cost-effective ways. This will help improve resource evaluations and impact assessments through greater scientific understanding of deepwater environments, improve mitigation methods and better inform programmatic decision-making.
<i><u>Context</u></i>	Primarily deepwater benthic habitats and connections. Spatial domain includes all OCS planning areas under BOEM jurisdiction. May expand to Territories should BOEM/OCSLA jurisdiction be expanded.

**BOEM Information Need(s):** BOEM requires authoritative baseline information about deepwater habitats and resources to inform NEPA assessments (Affected Environment and potential impacts), permitting/mitigation, resource evaluation and programmatic decision making across Regions and program areas (conventional energy, renewable energy, and marine minerals). Such information can be collected via collaborative offshore Mapping, Exploring, and Characterizing (MEC) efforts, per the recent Presidential [Memorandum](#) and its Section 2 National Strategy. BOEM’s Environmental Studies Program (ESP) requires a new, more adaptable mechanism to support MEC decision-making based on subject matter expertise.

**Background:** Section 2 of the 2019 Presidential Memorandum (PM) on Ocean Mapping mandates a National strategy to map the ocean throughout the U.S. EEZ, identify priority areas, and explore and characterize these priority areas. The PM calls on federal agencies to “act boldly” to implement its ambitious goals. To help achieve those goals, the strategy calls for developing new ways to better leverage the expertise and resources of multi-sector partnerships and collaboration across federal agencies and non-U.S. Government entities. BOEM has contributed substantially to developing this strategy, and now must shift to implementing it.

The ESP has previously led the way in MEC through mission-driven, NOPP-sponsored partnerships with NOAA and USGS including [Atlantic Canyons](#), [Deep SEARCH](#), and [EXPRESS](#)—all cited as exemplary by the NOMEK Task Force. These major efforts have significantly advanced the state of science and furthered appropriate management by increasing knowledge of continental margin geology, the types of seafloor communities, and connectivity with mid-water organisms. However, there is still incomplete information available about the distribution, composition, and sensitivity of deepwater seafloor habitats (i.e., hard bottoms, cold seeps, hydrothermal vents) and their associated benthic communities. For example, through its mapping and exploration activities, Deep SEARCH yielded the first known [observation](#) of a tubeworm in the Southeast Atlantic, and [discovered](#) a complex, 85 linear mile *Lophelia pertusa* reef system in an unexpected area. Because such deepwater habitats and fauna can potentially be negatively impacted by unmitigated OCS activities, BOEM must continue to better understand these ecosystems and their sensitivity to various impact producing factors. Though BOEM first initiated deepwater study efforts due to conventional energy activities, growing interest in critical marine minerals and the potential for offshore floating wind energy production have expanded these information needs.

Therefore, the mapping, exploration and characterization supported through this funding will focus primarily (but not exclusively) on these deepwater habitats in prioritized geographic areas throughout all OCS Regions. Due to the prohibitively high costs of deepwater fieldwork, BOEM must continue to collaborate with partners on research that cost-effectively addresses common information needs. Though quite successful, the historical BOEM template for deepwater research—single area, high dollar multi-year contractor/agency partnerships—does have inherent limitations. Lessons learned suggest a more responsive, adaptive funding process guided by strategically defined criteria could more effectively advance overlapping agency objectives and achieve the broader USG goals outlined in the PM. By evolving the model, BOEM’s ESP can expand the range of potential partners, better respond to short-notice opportunities, adapt to evolving mission priorities, and maximize return on investment of federal funds.

**Objectives:** The ESP must demonstrate continued leadership and innovation by expanding its ability to obtain high value deepwater information through mapping, exploration, and characterization efforts that address ongoing and emerging management needs and do so in a cost-effective manner. The envisioned funding processes and results are expected to support the following objectives:

- Provide a reliable source of ESP funding that can be accessed and directed year-round to take advantage of short-notice opportunities and respond to emerging priorities;
- Reduce costs and maximize overall return on federal investments by more effectively and strategically leveraging partnerships, with preference given to projects that offer cost sharing and overlapping or complementary science/mission objectives;
- Rely on collaboratively developed, objective criteria to guide project selection. One anticipated source for these criteria will be a new, regularly updated BOEM National Deepwater Mapping, Exploration, and Characterization Strategy that will help identify and prioritize BOEM's current geographic and topical needs;
- Employ a fair and transparent "internal proposal" submission and evaluation process;
- Continue advancing mapping, exploration and characterization of sensitive seafloor habitats and fauna to help clarify the type and degree of potential impacts from conventional energy, renewable energy, and marine minerals activities for environmental assessments and programmatic decision making
- Provide BOEM and USGS subject matter experts more consistent access to ship time improving their ability to design and execute studies and deliver critical information;
- Encourage use of emerging technologies including remote sensing tools to more efficiently survey the seafloor and water column, in line with NOMECS Strategy Objective 4;
- Identify and map major geologic seafloor features relevant to understanding potential hazards (such as submarine landslides) and associated risks to energy infrastructure, benthic and cultural resources, and coastal tsunami risk;
- Yield information about water and seabed geochemistry (e.g., ocean acidification, methane system) to help better quantify potential baseline shifts;
- Assess relative sensitivity to impacts by comparing food-web ecology, population structure, and genetic diversity across depths and other environmental covariates;
- Provide MEC data that can also be used to inform BOEM resource evaluations; and
- Complement and build on relevant Administration directives, principally the PM Section 2 NOMECS Strategy, and maintain close ties to the associated implementation body.

**Methods:** A combination of two different funding mechanisms is anticipated to help fulfill the above BOEM objectives and those of the broader NOMECS Strategy. First, new inter-agency agreements (IAA) with NOAA and USGS (and/or possibly National Science Foundation) to acquire vessel/submersible/sensor and targeted scientific staff support. NOPP involvement or sponsorship will be pursued where appropriate. These IAAs would build on the existing PC-20-03 "Fostering a Cohesive Interagency Offshore Mapping and Hard Bottom Habitat Characterization Program" project, which is limited to the Pacific. Second, a subset of available ESP funds will be reserved or "set aside" every year to be allocated over time to low-cost/high-value interagency opportunities.

A fair and transparent internal proposal submission and evaluation process will rely on collaboratively developed, objective criteria to help identify and prioritize eligible projects according to BOEM's current geographic and topical needs. One anticipated source for these criteria will be a new, regularly updated BOEM Deepwater Mapping, Exploration, and Characterization (DMEC) Strategy that will be developed by a newly established team of the same name, composed of SMEs from every Region and relevant Programs. The team will receive and evaluate proposed project ideas/requests (a template will be provided) involving known and emerging fieldwork opportunities (such as available ship time). Preference will be given to highly leveraged projects that cost-effectively meet near to mid-term programmatic and science needs. Identifying needs and opportunities will also involve regular discussion with key federal partners that share science and mission objectives (primarily NOAA and

USGS), and with non-USG entities where appropriate. Guided by the defined strategic/mission priorities and their situational awareness of regional/programmatic activities, the DMEC team will provide their input to the ESP Chiefs who will make specific funding recommendations to the DES Chief.

Discrete projects can include a broad range of interdisciplinary methods that advance mapping, sampling, and characterization of deepwater habitats. Some examples:

- Ship-based acoustic mapping can be used to measure bathymetry and delineate substrate types and the distribution of important hard bottom areas;
- Unmanned submersibles can provide seafloor imagery and enable collection of chemical, biological and geological samples;
- Trained scientific staff using laboratory materials/protocols (such as traditional taxonomic and genetic techniques) can analyze community composition and impact sensitivity;
- eDNA sampling and referencing can shed new light on biodiversity and species distribution;
- Data management best practices (such as submitting coral and sponge locations in a format consistent with the NOAA Deep Sea Coral Research and Technology Program national geodatabase) can promote data access and usability.

Results will be made available in ESPIS via final reports, peer-reviewed literature, etc. Select data can be archived through the NOAA National Centers for Environmental Information.

**Specific Research Question(s):**

1. Where are the sensitive hardbottom benthic habitats in deepwater areas of the OCS that could be leased for conventional energy, renewable energy, or marine minerals?
2. What are the current and projected environmental conditions and biological composition of these habitats? How are species ecologically and genetically connected?
3. How can BOEM and federal partners best collaborate to achieve agency mission objectives and further the goals of the Section 2 NOMECS Strategy?