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# Evaluating Connections: BOEM'S Environmental Studies and Assessments

## Evaluation Methodology

## Final Report

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## DISCLAIMER

Study concept, oversight, and funding were provided by the U.S. Department of the Interior (DOI), Bureau of Ocean Energy Management (BOEM), Environmental Studies Program, Washington, DC, under Contract Number GS-10F-0061N, Task Order 140M0119F0039. This report has been technically reviewed by BOEM, and it has been approved for publication. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the U.S. Government, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

## REPORT AVAILABILITY

To download a PDF file of this report, go to the DOI, BOEM Environmental Documents webpage (https://www.boem.gov/environment/environmental-documents).

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# I. INTRODUCTION AND PURPOSE OF THE EVALUATION

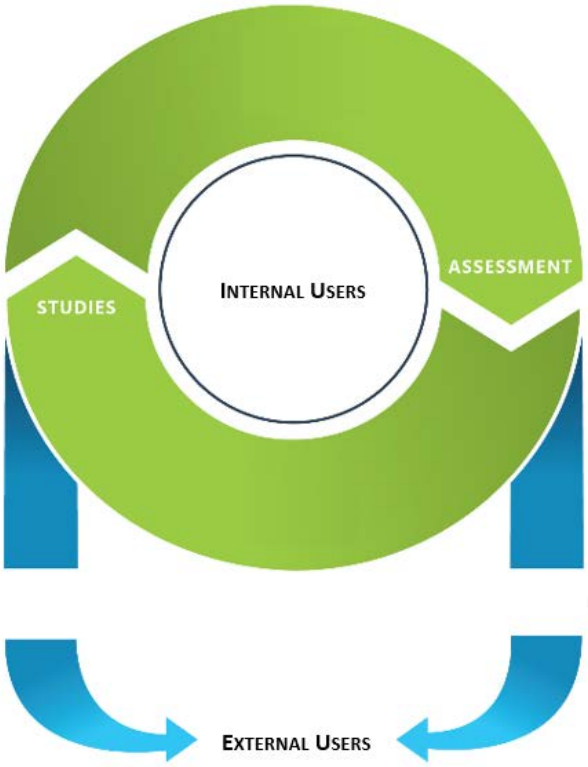
BOEM's mission is to manage the development of U.S. Outer Continental Shelf (OCS) energy and mineral resources in an environmentally and economically responsible way. The OCS Lands Act (OCSLA) of 1953 granted the Secretary of the Interior the authority to oversee the exploration and development of mineral resources on the OCS and the Energy Policy Act of 2005 expanded the Secretary's authority to include management of renewable energy resources.

Section 20 of the OCSLA resulted in the development of BOEM's Environmental Studies Program (ESP) to develop studies that establish information needed for the assessment and management of environmental impacts of oil and gas and other mineral development on the human, marine, and coastal environments. In fulfilling its mission, BOEM must comply with a range of environmental requirements, including but not limited to the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), Coastal Zone Management Act (CZMA), and the National Historic Preservation Act (NHPA). In so doing, BOEM develops environmental assessments, consultation documents, and other analyses that use the best available information. Much of that information flows from BOEM-sponsored research, particularly studies sponsored by the ESP.

As shown in Exhibit 1, BOEM has described this process as a "feedback loop" in which studies inform assessments and assessments inform studies. The first part of the feedback loop shows the results of BOEM's studies informing assessment documents, consultations, and other environmental work products. In the second part of the feedback loop, information needs identified through BOEM assessments and consultations are developed into study profiles and funded studies. However, BOEM has not yet tested these linkages between assessments and studies or formally examined how well the information is supporting the Bureau's decisions.

BOEM initiated this evaluation to understand how ESP-funded research is contributing to BOEM's assessments. Through this evaluation, BOEM aims to understand the extent to which study results are incorporated into assessments, information needs are identified through the assessment process, and studies and assessments are informing policy decisions.

**EXHIBIT 1. BOEM ENVIRONMENTAL STUDIES AND ASSESSMENTS FEEDBACK LOOP**



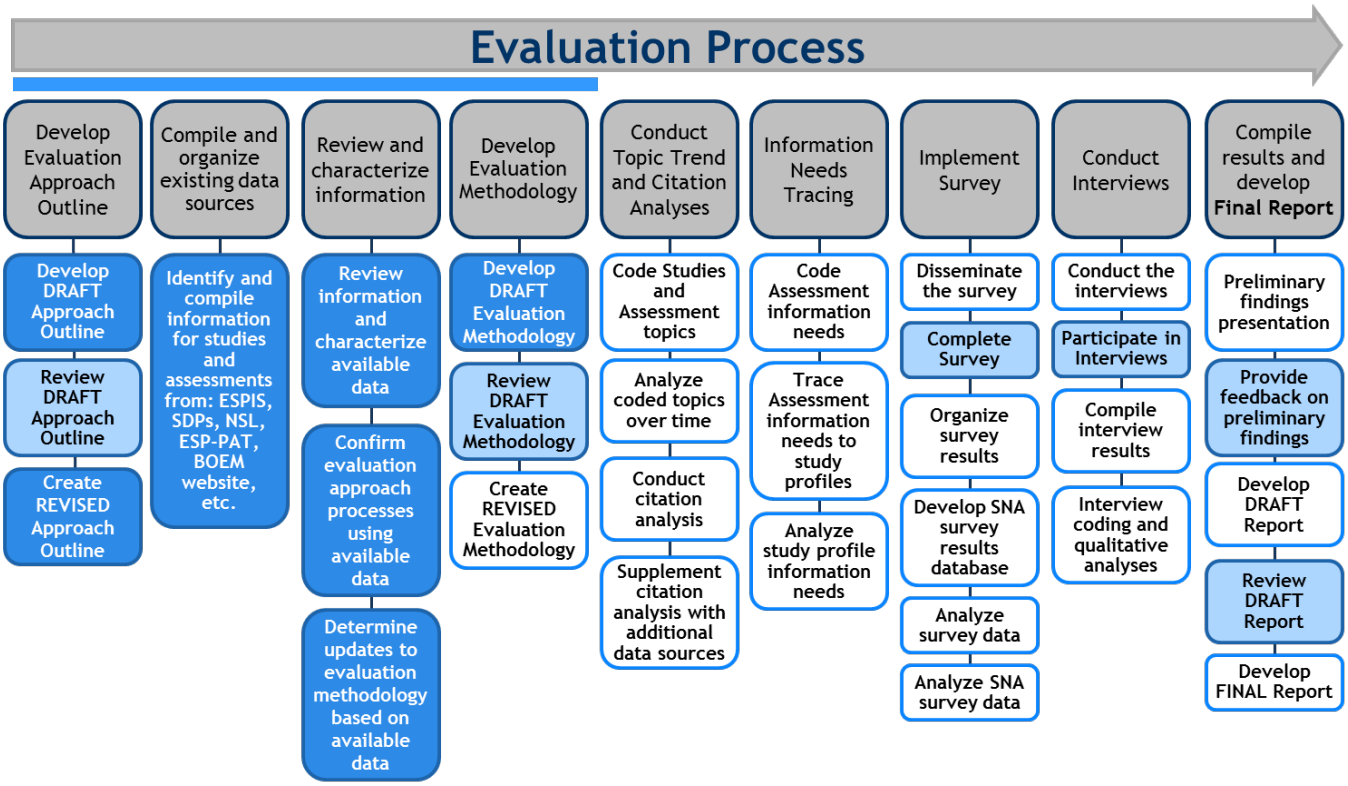

The evaluation will be conducted over three years. The first two years focus internally. Key topics of the internal evaluation include how well BOEM is communicating information needs and study results across the Bureau, and the extent to which results from studies are being incorporated into assessments and informing BOEM's policy decisions. Year 1 focuses on designing the internal evaluation methodology (the focus of this document); Year 2 will focus on implementing the methodology, collecting evaluation data, and developing evaluation findings. During Year 2 we will also begin preparations for the external evaluation. Year 3 will flesh out and implement the external evaluation design. The external evaluation will look outside of BOEM, including how well BOEM is communicating science to external users, how BOEM collaborates with other federal and state agencies, and whether/how BOEM's assessments and consultations are being used by other federal or state agencies.

IEc provided a preliminary Draft Evaluation Approach Outline in January 2020 and presented the contents at an Interim Progress Meeting in Sterling, VA in February 2020. Following the meeting, BOEM provided additional feedback in written comments and discussions with IEc. Based on the feedback, IEc submitted a revised Evaluation Approach Outline in March 2020. IEc has continued to expand and refine the evaluation methodology through further research, consultations with the BOEM project team and the ESPIS team, compilation of additional assessment documents, coding of assessment documents, and nine evaluation scoping interviews with Studies and Assessment managers in BOEM Headquarters and the Alaska, Pacific, and Gulf of Mexico Regions. Based on the scoping interviews and our ongoing work since the Interim Progress

Meeting, IEc refined the evaluation methodology presented here. We describe the changes made to the evaluation approach throughout the relevant sections of this report and summarize the key changes in Section V: Summary of Evaluation Approach Updates.

As shown in Exhibit 2, IEc's proposed evaluation process for the internal evaluation (Years 1 and 2) follows nine primary steps: develop Evaluation Approach Outline; compile and organize existing data sources; review and characterize information; develop Evaluation Methodology; conduct topic trend and citation analyses; trace information needs; implement survey; conduct interviews; and compile results/develop Final Report.

**EXHIBIT 2. EVALUATION PROCESS AND PROGRESS TO-DATE FOR YEAR 1 AND 2**




Light blue squares indicate BOEM role; darker blue squares indicate progress to-date.

This document is organized into seven sections. Following this introduction, Section II provides a description of the ESP as well as BOEM's environmental assessment work. Section III presents the evaluation questions that will guide this study. Section IV presents the proposed data sources, analytical approaches, and metrics for answering the evaluation questions. Section V summarizes key changes to the evaluation approach following the Interim Progress Meeting. Section VI identifies evaluation challenges and how these will be mitigated. Section VII outlines how the evaluation results will be presented to BOEM.

# II. DESCRIPTION OF THE ENVIRONMENTAL STUDIES PROGRAM AND BOEM'S ENVIRONMENTAL ASSESSMENT WORK

## ENVIRONMENTAL STUDIES PROGRAM

BOEM's ESP develops, funds, and manages scientific research to inform decision-making. The ESP studies provide information on the environmental impacts of OCS activities as well as the status, trends, and resiliency of potentially affected environmental resources. The ESP prepares an annual Studies Development Plan (SDP), which documents proposed studies for the two upcoming fiscal years. Recent SDPs also include a section for each office that articulates the decision context and upcoming decisions that drive selected study topics. The SDP includes a profile of each proposed study. This profile describes the study's relevance to BOEM's information needs and outlines study objectives, methods, research questions, and approximate cost. The ESP relies on seven criteria to evaluate and prioritize potential study topics for inclusion in the SDP:

1. Need for Information in BOEM Decision Making.
2. Contribution to Existing Knowledge.
3. Research Concept, Design & Methodology.
4. Cost-Effectiveness.
5. Leveraging Funds.
6. Partnerships.
7. Multi-Regional & Strategic Utility.

The SDP serves as an internal planning document for BOEM, and typically not all proposed studies included in the SDP are conducted. Drawing from the SDP, BOEM develops the annual National Studies List (NSL), which narrows down the list of studies from the SDP to the list of new and continuing studies set to receive BOEM funding in the upcoming fiscal year. To inform the selection of studies for the NSL, BOEM's Regional Offices may priority rank studies in the SDP based on relevance to the ESP criteria. To reach consensus on which studies receive funding in a given year, the NSL is discussed in a meeting with all BOEM Regional Directors and Program Managers before being passed on to the BOEM Director for final approval. After the NSL is finalized, BOEM procures the studies included in the NSL through competitive contracts;

cooperative agreements with state institutions, universities, or Tribes and Tribal NGOs;[1] or interagency agreements with other Federal agencies.

In keeping with the Statement of Work and decisions made at the project orientation meeting, the scope of this evaluation encompasses all ESP-funded research; it does not include research funded solely through other BOEM funding mechanisms. While recognizing that other (non- ESP-funded) research also contributes to assessments and policy decisions, the evaluation scope reflects the need to draw clear boundaries around the studies to be included. The criterion that studies must be funded in whole or in part by ESP provides clear parameters for inclusion and facilitates access to the studies because they should all be in ESPIS – in contrast to the assessments, which the evaluation team compiled from multiple sources, with substantial input from BOEM staff. Although this project excludes studies that received no ESP funding, we understand based on discussions with BOEM that this represents a very small fraction of BOEM's scientific studies over the past 10-20 years. The findings and recommendations of this project will apply to the ESP; future analysis under a separate project could augment the results with BOEM research funded through other mechanisms.

### ENVIRONMENTAL ASSESSMENTS

A key part of BOEM's mission is ensuring environmental protection through compliance with environmental statutes, regulations, and executive orders. This typically requires detailed analysis of potential environmental impacts of exploration and development activities in the OCS. For purposes of this project, the term "environmental assessment" encompasses the full suite of analyses that BOEM's Environmental Assessment program undertakes related to compliance with environmental statutes, regulations, and executive orders, and is not restricted to NEPA Environmental Assessments. Relevant statutes and regulations include:

- National Environmental Policy Act (NEPA).
- National Historic Preservation Act (NHPA).
- Magnuson-Stevens Fishery Conservation and Management Act (FCMA).
- Endangered Species Act (ESA).
- Air Quality Act (1967) or the Clean Air Act (CAA).
- Coastal Zone Management Act (CZMA).
- Marine Mammal Protection Act (MMPA).
- OCS Lands Act (OCSLA).

[1] BOEM can procure studies through cooperative agreements with Tribes and Tribal NGOs but does not have any currently. SOL General Law gives BOEM the legal authority to enter into cooperative agreements with Tribes directly in some cases (e.g. educational projects) under the Take Pride in America statute and with any non-profit organization, including one established by a Tribe, under another statutory authority. Email correspondence from M. Davidson to D. Kaufman, February 27, 2020.

BOEM must comply with these and other statutes and regulations to carry out its mission of managing the development of OCS energy and mineral resources in an environmentally and economically responsible way. To do so, BOEM conducts environmental assessments of the impacts (including environmental, social, and economic impacts) of its programs in conventional energy resources, renewable energy resources, and non-energy minerals. BOEM also provides oversight, policy guidance, and direction through consultations within the Bureau and with other agencies.

Environmental assessments are conducted to comply with regulations, provide an understanding of the potential impacts of a project for decisionmakers and the public, and ensure the potential impacts are minimized to the extent possible. For example, BOEM prepares environmental assessments to satisfy the requirements of NEPA, ESA, MMPA, CZMA, and NHPA. In addition, pursuant to OCSLA, BOEM prepares reports that examine the environmental sensitivity and marine productivity in potential areas to be leased as part of the National OCS Oil and Gas Leasing Program. These reports assist in specifying the size, timing, and location of potential OCS leases. BOEM also prepares a programmatic environmental impact statement (EIS) for the National Oil and Gas Leasing Program, which typically covers five-year increments.

For the purposes of this evaluation, the universe of assessments includes environmental assessment documents prepared pursuant to the statutes and regulations listed above. The following are types of assessment documents that IEc considered for inclusion in this evaluation (i.e., types of documents considered in the universe of assessments):

- NEPA Environmental Impact Statements.
- NEPA Environmental Assessments.
- NHPA Documents (includes Section 106 evaluations of effects on historic properties and programmatic agreements).
- Essential Fish Habitat Assessments for Magnuson-Stevens Act consultations.
- ESA Section 7 Biological Evaluations.
- ESA Section 7 Biological Assessments.
- Analyses and assessments prepared for CAA, CZMA, MMPA, and EO 13795.
- Government to government (e.g., tribal) consultations.
- Analyses and assessments such as engineering analyses, regulatory impact analyses, resource evaluations, additional NEPA-related analyses, site assessments, and cost-benefit analyses, prepared for OCSLA and other regulatory requirements.

### INTERSECTION OF ENVIRONMENTAL STUDIES PROGRAM AND ENVIRONMENTAL ASSESSMENT WORK

BOEM Headquarters' offices as well as each of the three regional offices have formal sections separately addressing environmental assessment and environmental study functions. However, although the formal structure distinguishes between these two

functions, the scoping interviews indicated that in all the Headquarters and regional offices, environmental study and environmental assessment functions are shared across the sections. In most cases, a subject matter expert (SME) works on both environmental assessments and environmental studies, regardless of what office they formally reside in.

# III. EVALUATION QUESTIONS

This evaluation seeks to address three types of questions: 1) process questions, related to the implementation of the environmental studies and environmental assessment feedback loop; 2) outcome questions, related to the results of the feedback loop; and 3) measurement questions, related to means in which to assess performance of the feedback loop going forward.

IEc identifies process questions in evaluations to help determine if program activities are being implemented as planned or assumed. Overall, these answer the question: What is BOEM doing to implement the feedback loop? Outcome questions help determine if program activities are causing the desired results. They answer the question: What results does BOEM see from their activities? Combined, these two categories of questions help identify if a program is working well and potential reasons why it may or may not be working well.

As specified in the Statement of Work, the internal evaluation will address three overarching evaluation questions:

1. How well do BOEM environmental studies inform BOEM's environmental assessments?
2. How well do BOEM's environmental assessments inform new BOEM studies?
3. How well are information needs and study findings communicated across BOEM?[2]

Underlying all three of these questions is the evaluation question: If changes to the feedback process are needed, what would they be and who would be responsible for implementing the changes? This measurement question will be addressed based on the answers to Questions 1-3.

Exhibit 3 provides the three overarching evaluation questions, associated sub-questions that will help answer the three overarching questions, and the associated question type (process, outcome, or measurement). While the three overarching questions above are taken directly from the Statement of Work, IEc has made minor updates to the sub-questions shown in Exhibit 3 for the purpose of organizing the evaluation approach.

[2] The Statement of Work for this project includes a fourth overarching evaluation question: What is the impact on the external environmental community? Question 4 will be addressed in Year 3 of the project (external evaluation).

**EXHIBIT 3. EVALUATION QUESTIONS AND QUESTION TYPE**

| EVALUATION QUESTION | EVALUATION QUESTION TYPE |
|---|---|
| **Q1. How well do BOEM environmental studies inform BOEM environmental assessments?** | |
| 1. How are the study results used internally (consider both final and interim results)? | Outcome |
| a. Do study results inform mitigation measures, NEPA reviews, consultations, models, follow-on studies, etc.?[3] | Outcome |
| b. How can BOEM identify, document, and measure the internal use of the studies? | Measurement |
| 2. How are products other than the final study report (e.g. journal articles) used in assessments? | Outcome |
| **Q2. How well do assessments inform studies?** | |
| 1. Are information needs identified through the assessment process being developed into studies? | Outcome |
| a. If yes, how do the results of the studies address the information needs identified in the study profiles? | Outcome |
| b. If not, why? | Outcome |
| c. How can BOEM identify, document, and measure the assessment information needs to inform studies? | Measurement |
| **Q3. How does the feedback loop function?** | |
| 1. How are the results of studies communicated internally (consider both final and interim results)? | Process |
| a. Are the results presented internally? | Process |
| b. Are the results published in ESPIS? | Process |
| c. Are the results shared using the ESP-PAT tool? | Process |
| d. How can BOEM identify, document, and measure the internal communication of their studies? | Measurement |
| 2. How are assessment information needs identified? | Process |
| a. Who identifies information needs? | Process |
| 3. Once identified, how are the information needs communicated internally? | Process |
| a. Who communicates information needs? | Process |
| b. How can BOEM identify, document, and measure the internal communication of their information needs? | Measurement |
| 4. If changes to the feedback process are needed, what would they be and who would be responsible for implementing the changes? | Process |

The next section (Section IV) describes the proposed data sources, metrics, and analytical approaches for answering the evaluation questions.

[3] The original evaluation question included Notices to Lessees and Operators (NTLs) in this question. However, this evaluation considers NTLs to be policy documents, not assessments, and will evaluate NTLs in this context. Please see the main text below for more information.

# IV. DATA SOURCES AND ANALYTICAL APPROACHES

IEc proposes to draw on multiple data sources to answer the evaluation questions. Key sources of information will include: 1) environmental studies, 2) environmental assessments, 3) survey, 4) interviews, 5) the Environmental Studies Program Performance Assessment Tool (ESP-PAT), and 6) other program documents.

Each data source is described in more detail below. Following a description of the data sources, we describe how we will analyze the data to answer each evaluation question.

## DATA SOURCES

Environmental studies, environmental assessments, an online survey, interviews, and ESP-PAT will be the main data sources for addressing most of the evaluation questions. Other program documents primarily serve to contextualize and interpret evaluation findings.

Exhibit 4 summarizes which data sources will be used to answer each evaluation question. A description of each data source follows the exhibit.

**EXHIBIT 4. DATA SOURCES TO ADDRESS EACH EVALUATION QUESTION[4]**

| EVALUATION QUESTION | STUDIES | ASSESSMENTS | INTERVIEWS | SURVEY | ESP-PAT | OTHER PROGRAM DOCUMENTS |
|---|---|---|---|---|---|---|
| **Q1. How well do BOEM environmental studies inform BOEM environmental assessments?** | | | | | | |
| 1. How are the study results used internally (consider both final and interim results)? | ✓ | ✓ | ✓ | ✓ | ✓ | |
| a. Do study results inform mitigation measures, NEPA reviews, consultations, models, follow-on studies, etc.? | ✓ | ✓ | ✓ | ✓ | ✓ | |
| b. How can BOEM identify, document, and measure the internal use of the studies? | Proposed metrics for ongoing measurement to be determined through implementation of the evaluation. | | | | | |
| 2. How are products other than the final study report (e.g. journal articles) used in assessments? | ✓ | ✓ | ✓ | ✓ | ✓ | |
| **Q2. How well do assessments inform studies?** | | | | | | |
| 1. Are information needs identified through the assessment process being developed into studies? | ✓ | ✓ | ✓ | ✓ | ✓ | |
| a. If yes, how do the results of the studies address the information needs identified in the study profiles? | ✓ | ✓ | ✓ | ✓ | ✓ | |
| b. If not, why? | | | ✓ | ✓ | ✓ | |
| c. How can BOEM identify, document, and measure the assessment information needs to inform studies? | Proposed metrics for ongoing measurement to be determined through implementation of the evaluation. | | | | | |

[4] Data sources contributing to the available information on environmental studies includes BOEM's Environmental Studies Program Information System (ESPIS), a database with ESP-funded studies, BOEM reports, and associated publications; the National Studies List (NSL); and the Studies Development Plans (SDPs).

| EVALUATION QUESTION | STUDIES | ASSESSMENTS | INTERVIEWS | SURVEY | ESP-PAT | OTHER PROGRAM DOCUMENTS |
|---|---|---|---|---|---|---|
| **Q3. How does the feedback loop function?** | | | | | | |
| 1. How are the results of studies communicated internally (consider both final and interim results)? | | | ✓ | ✓ | ✓ | ✓ |
| a. Are the results presented internally? | | | ✓ | ✓ | | ✓ |
| b. Are the results published in ESPIS? | | | ✓ | ✓ | | ✓ |
| c. Are the results shared using the ESP-PAT tool? | | | ✓ | ✓ | ✓ | ✓ |
| d. How can BOEM identify, document, and measure the internal communication of their studies? | Proposed metrics for ongoing measurement to be determined through implementation of the evaluation. | | | | | |
| 2. How are assessment information needs identified? | | ✓ | ✓ | ✓ | | |
| a. Who identifies information needs? | | | ✓ | ✓ | | |
| 3. Once identified, how are the information needs communicated internally? | | | ✓ | ✓ | | ✓ |
| a. Who communicates information needs? | | | ✓ | ✓ | | ✓ |
| b. How can BOEM identify, document, and measure the internal communication of their information needs? | Proposed metrics for ongoing measurement to be determined through implementation of the evaluation. | | | | | |
| 4. If changes to the feedback process are needed, what would they be and who would be responsible for implementing the changes? | Recommendations for the feedback process to be developed based on a synthesis of answers to the previous evaluation questions. | | | | | |

### ENVIRONMENTAL STUDIES

IEc will use three main sources of information related to environmental studies: BOEM's Environmental Studies Program Information System (ESPIS), a database with ESP-funded studies and associated BOEM reports and external publications; the National Studies List (NSL); and the Studies Development Plans (SDPs), which contain the proposed study profiles. Each of these sources is maintained separately and provides different information about BOEM environmental studies; combined, they provide a robust set of data for understanding BOEM topics and information needs that were pursued over time. For purposes of this evaluation, IEc will refer to the combination of the data contained in these sources generally as "environmental studies." The remainder of this section describes the data sources in more detail and IEc's process for joining the information on individual environmental studies across the three data sources.

BOEM maintains a public-facing database of ESP-funded research through the ESPIS web interface.[5] BOEM provided IEc a back-up version of the database in October 2019; in this evaluation methodology, IEc refers to this as the "IEc ESPIS database."[6] ESPIS contains detailed information on study characteristics, including:

- Project dates.
- Region.
- Category/discipline (e.g., marine mammals, fates and effects, etc.).
- Keywords.
- Study title.
- Abstract.
- Associated BOEM reports.
- Associated external publications.

Exhibit 5 displays the number of studies with active contract dates in a given year, and the new studies initiated in that year. The complete list of studies within the evaluation scope is listed in Appendix D: Environmental Studies in Evaluation. The data indicate that these numbers have held relatively steady over time.

The NSL indicates the studies that received ESP funding for each Fiscal Year (FY). It generally reflects the narrowed list of studies from the profiles provided in the SDPs or longstanding regularly funded studies that received ESP funding for any given year.

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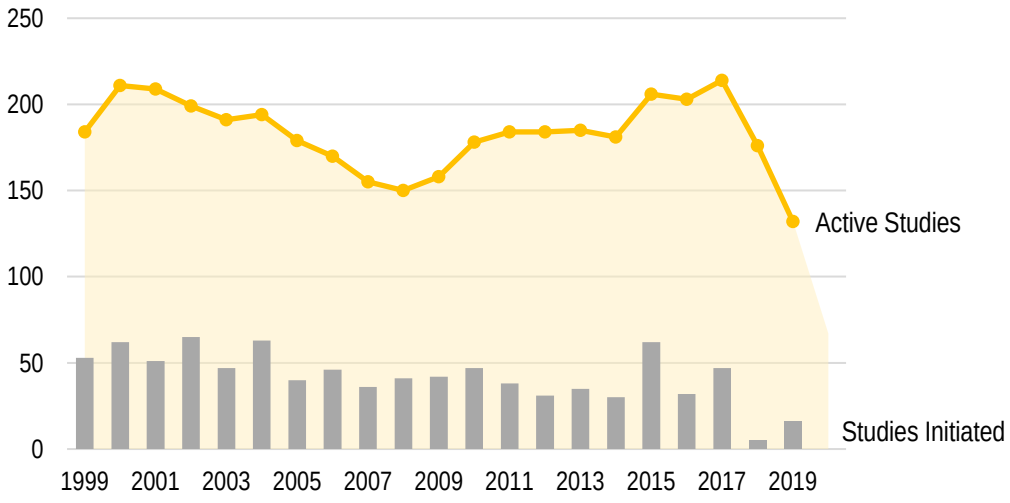
[5] https://marinecadastre.gov/espis. Users may download any of the associated BOEM reports and associated external publications through the ESPIS interface. Currently ESPIS does not allow users to search for content within the BOEM reports or associated external publications via the ESPIS interface.

[6] IEc currently has a database that reflects the status of ESPIS as of mid-October 2019. Prior to conducting the evaluation, IEc will utilize a version of the ESPIS database capturing information through December 2019.

BOEM provided an Excel spreadsheet of funded study titles and their associated NSL numbers for FY 1999 through FY 2018 for use in the evaluation.

**EXHIBIT 5. NUMBER OF STUDIES IN ESPIS OVER TIME**

The number of studies with active contract dates and new studies initiated by year has held relatively steady over time.




Source: ESPIS as of mid-October 2019 (Q4 data pending from ESPIS Team)

Each SDP covers a three-year planning period. The plans include study profiles that describe the studies proposed for the upcoming fiscal year and one subsequent year. One function of the study profiles is to identify specific information needs within BOEM to be addressed by the proposed study. This provides key information for understanding the feedback loop, but it is contained within multiple PDF or Word files. To utilize this data for analyses, IEc followed a systematic process to extract and consolidate this information in a central database. IEc downloaded all available SDPs from BOEM's website, which included the SDPs for FY 2011-2013 through FY 2020-2022.[7] For documents not on the website, BOEM provided IEc with a compilation of SDPs and associated study profiles for additional years going back to 2006; since the evaluation timeframe covers 1999-2019 this leaves a data gap for studies between the 1999-2005 time period. Exhibit 6 summarizes available data for this effort. Based on an extensive search, the BOEM evaluation team confirmed that IEc has all available and accessible SDPs. If studies exist for programs/regions in the years marked "no" in the table, they are embedded in other sections of the SDP and did not have their own individual section.

[7] SDPs available here: https://www.boem.gov/environment/environmental-studies/environmental-studies-planning.

**EXHIBIT 6. SDPS FROM WHICH IEC HAS EXTRACTED STUDY PROFILE INFORMATION**

| SDP FISCAL YEARS | NATIONAL/ HQ | MMP | ALASKA | GULF OF MEXICO | PACIFIC | ATLANTIC | ALTERNATIVE ENERGY/ RENEWABLE ENERGY*** |
|---|---|---|---|---|---|---|---|
| **2006-2008** | Yes | Yes | Yes | Yes | Yes | No | No |
| **2007-2009** | Yes | Yes | Yes | Yes | Yes | No | No |
| **2008-2010** | Partial* | No | Yes | Yes | Yes | Partial* | No |
| **2009-2011** | Yes | N/A** | Yes | Yes | Yes | No | Yes |
| **2010-2012** | Yes | N/A** | Yes | Yes | Yes | No | Yes |
| **2011-2013** | Yes | N/A** | Yes | Yes | Yes | Yes | No |
| **2012-2014** | Yes | N/A** | Yes | Yes | Yes | Yes | Yes - subsection |
| **2013-2015** | Yes | N/A** | Yes | Yes | Yes | Yes | Yes - subsection |
| **2014-2016** | Yes | N/A** | Yes | Yes | Yes | Yes | Yes - subsection |
| **2015-2017** | Yes | Yes | Yes | Yes | Yes | Yes | Yes - subsection |
| **2016-2018** | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **2017-2019** | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **2018-2020** | Yes | Yes | Yes | Yes | Yes | No | Yes |
| **2019-2021** | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **2020-2022** | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

***Notes:***
*Partial indicates that IEc received at least one proposed study profile, but it was not included in a full SDP.
**The official SDP PDF does not include a section for MMP in these years.
***The Renewable Energy program was referred to as Alternative Energy at one point in time.

Relevant information from each study profile includes study title, region, planning area, BOEM information needs served, background, objectives, methods, and specific research questions. IEc developed a Visual Basic for Applications (VBA) macro to systematically extract the relevant information into an Excel spreadsheet. The consolidated list (accounting for study profiles that appeared in multiple SDPs) comprises 957 profiles of proposed studies, with approximately 100 studies that were in multiple SDPs.

To narrow the list of proposed study profiles extracted from the SDPs to those profiles relevant for the analysis, IEc cross-referenced the extracted profiles with the studies included in the ESPIS database. IEc first created a query of all the studies in ESPIS that included each study's Studies ID, NSL, Study Title, Contracts ID, and the keywords and project start and end dates associated with the contract. IEc then narrowed the scope of studies to those holding contracts from 1999-2019. If a contract was initiated prior to 1999 but was ongoing at any point from 1999-2019, it was included in the query, along with any contract initiated after 1999. The resulting query, which was exported to an

Excel spreadsheet, contained the relevant studies to match with the extracted study profiles.

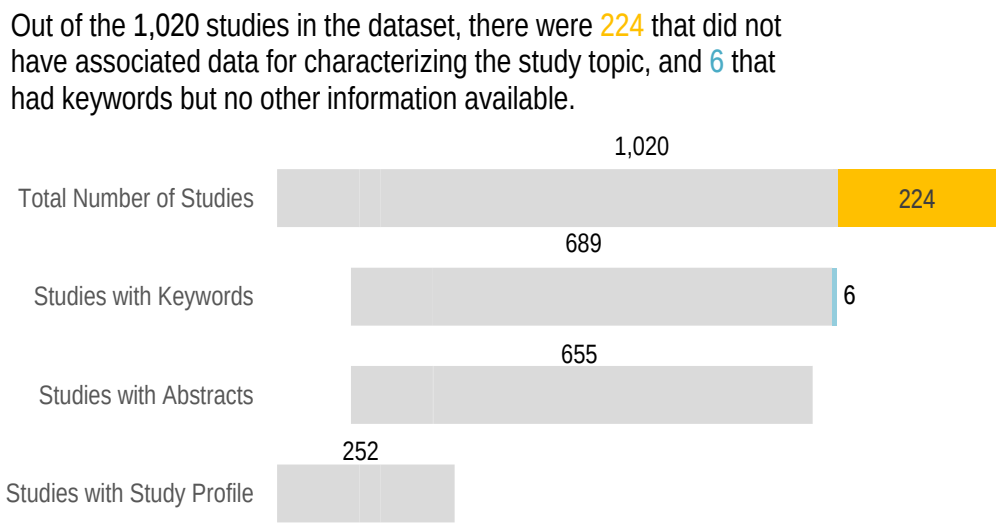
With each data source in a compatible format, IEc used the NSL number, a unique identifier for each study, to join the data from the NSL to the IEc ESPIS database. However, since study profiles in the SDP are not yet funded, they do not have an NSL number. The only unique identifying factor study profiles have is the title, which often differed from the ESPIS study title in ways that prevented full automation of the matching. IEc created a cross tabulation, with ESPIS study titles and NSL in two columns and the study profile titles and SDP year in two rows. IEc used a formula to search for the profile title within the study title and vice versa, removing all punctuation and capitalization from the search to ensure these frequent differences between the study and profile titles did not prevent a match.

After executing the matching formula, for any studies that did not have an identified match, IEc conducted a manual search. Some studies had an obvious match with a profile because the only change was, for example, an acronym (e.g., the study used "Outer Continental Shelf" while the profile used "OCS"), but not all of the unmatched studies were as straightforward. IEc used professional judgment on keywords in the study titles to determine similar titles between the NSLs and SDPs. For example, NSL# GM-08-03, titled "Exploration and Research of Northern Gulf of Mexico Deepwater Natural and Artificial Hard-Bottom Habitats with Emphasis on Coral Communities: Reefs, Rigs, and Wrecks - Lophelia II," had no exact match among the study profiles. However, SDP 2007-2009 had a profile titled "Continued Investigations of Northern Gulf of Mexico Deepwater Hard Bottom Communities with Emphasis on Lophelia Coral" which could feasibly refer to the same study. Search terms IEc used to match these titles included "hard-bottom," "communities," and "Lophelia."

There is a total of 1,020 studies contained in ESPIS that were active at any point between 1999-2019. The process described above resulted in successfully matching 252 profiles with studies in ESPIS (approximately 25%). The relatively low percentage of ESPIS studies that could be matched to a study profile was somewhat unexpected but may be the result of several factors. Study profiles only exist for FY 2006 and later; the number of studies in the dataset that began prior to FY 2006 totals 508 (calculations assume FY 2006 begins October 1, 2005). Among these, 127 studies were in ESPIS with an NSL number but did not have associated contracts, and therefore no specific study start dates. In these cases, IEc assigned the start and end year of the study to the year as indicated by the NSL number. Subtracting the pre-FY 2006 studies from the dataset, approximately 49% of the studies have an associated study profile. Other reasons why ESPIS studies may not match a study profile include: study titles differ between ESPIS and the study profile to such an extent that they could not be matched; or multiple study profiles were merged to create a new study that does not exclusively reflect the original study profiles.

In addition to the information obtained from the profiles, many studies in ESPIS have keywords and abstracts, fields that IEc will use to conduct analyses. Seventy-eight percent of studies have associated keywords, abstracts, profiles, or some combination of the three; the remaining 22% (224 studies) have only a study title and ID. See Exhibit 7 for a complete breakdown of data available for analyses.

**EXHIBIT 7. ENVIRONMENTAL STUDIES DATA AVAILABLE FOR ANALYSES**




As outlined in the evaluation approach outline, IEc had planned to heavily rely on the information in the study profiles to characterize the information needs associated with each study. However, the work we have conducted in the interim suggests that this information is not consistently available across all studies. Instead, IEc will use the "information needs to be addressed" section of the profiles (where available) in conjunction with the previously identified data fields from ESPIS to provide summarized, contextual information describing the study for use in identifying topics and for use in the topic trend analysis described below.

### BOEM Published Documents and Outside Publications Associated with Studies

As discussed above, ESPIS provides a comprehensive set of studies, and includes known BOEM published reports, data products (e.g., data sets), and external publications including peer-reviewed journal articles. However, ESPIS database managers indicated that records of related publications are incomplete. Capturing peer-reviewed articles in ESPIS has been challenging due to the timing of reporting: Studies are reported in ESPIS at the time the study is conducted, but peer-reviewed publications are frequently published well after the original study (e.g., two years later). There is not a formal mechanism for authors to report their peer-reviewed articles to ESPIS after the original study. As a result, the publication data in ESPIS is incomplete.

Further, feedback received during the interim progress meeting and scoping interviews suggests that BOEM staff prefer to cite peer-reviewed articles rather than the underlying BOEM study when developing assessments. This emphasizes the need to pursue additional collection of peer-reviewed publications associated with BOEM environmental studies, because an assessment is more likely to cite the peer-reviewed article than the

underlying BOEM report. Connecting the peer-reviewed article to the BOEM report and original study is a necessary interim step.

ESPIS database managers have previously taken steps to identify and verify related data products and publications, and IEc has been in regular contact with the ESPIS team to coordinate our efforts. For example, the ESPIS team referred us to *Enhancement of the Environmental Studies Program Information System and Marine.Cadastre.gov* (May 2019), which (among other tasks) searched for and validated supporting literature and data product locations for ESP-funded studies. The study included a significant effort to incorporate ESP-related publications into the database and ensure that peer-reviewed publications were properly captured. Decision criteria were established and documented to verify and validate publications identified by BOEM as "authoritative," including bibliographies of ESP study-related scientific research published in peer-reviewed journals. The publications indexed in the bibliographies obtained from BOEM were matched with studies, usually via a contract number (obligation number), and entered into the Publications table in ESPIS.[8] The authoritative list of peer-reviewed literature resources included in the publications table is summarized in Exhibit 8 below.

**EXHIBIT 8. ENVIRONMENTAL STUDIES DATA AVAILABLE FOR ANALYSES**

| | LITERATURE RESOURCE[9] |
|---|---|
| 1 | Johnson WC 2nd, DiCristoforo DJ, Clayton NW. 1989. Offshore Environmental Studies Program bibliography 1973–1987. Prepared for US Department of the Interior, Minerals Management Service, Branch of Environmental Studies. MMS Contract 17662. OCS Study MMS 89-0087. 314 p. |
| 2 | Tetley M, Wells K. 1993. Bibliography: scientific journal articles based on MMS environmental research. Prepared for US Department of the Interior, Minerals Management Service, Environmental Studies Branch. OCS Statistical Report MMS 93-0069. 307 p. |
| 3 | Alaska OCS Peer-Reviewed Bibliography (unpublished) |
| 4 | ESP Journal Log 3 (Rasser M, Wallace B, personal communication of ESP Journal Log 3 spreadsheet, May, 2014) |
| 5 | ESPIS documents (e.g., technical summaries, final reports, etc.) |

Ramirez, et. al. states that the authoritative list of publications was provided late into the project; before the list was provided, the team relied on technical summaries and final reports for discovering related publications and conducted lengthy internet searches yielding many publication results. The project team decided that the publications from these internet searches required further review for validity before being finalized in the

[8] Ramirez A, Foster E, Krejci K, Stein D. 2017. Enhancement of the Environmental Studies Program Information System and MarineCadastre.gov. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2019-002. 60 p.

[9] Ibid.

ESPIS publications table.[10] The team created a decision tree for the identification and inclusion of publications not specifically identified in any of the provided authoritative sources, as detailed in Section 4.8.1 of their report. Briefly, the authoritative sources listed above were referenced first, and then other websites were referenced to make sure that at least one of the following inclusion rules were met: BOEM personnel were listed as participants in the publication; the BOEM (or historical MMS agency) obligation number was included in the acknowledgments; and/or BOEM personnel had provided the publication or a collection of publications as an authoritative source.[11]

IEc believes that the approach described above provides a good starting point for the Evaluating Connections evaluation, subject to some important caveats. First, the ESPIS team noted that its exercise focused to a large extent not on adding publications, but on removing publications that had been erroneously included in ESPIS, by developing and applying the validation criteria referred to in the previous paragraph. By extension, any "new" publications that IEc identifies through other-than-authoritative sources would need to be validated as being linked to a BOEM study. Another caveat is that the exercise included publications in existence as of 2015, when the search and validation process was conducted. Applying the previously mentioned two-year rule of thumb between ESP study reports and peer-reviewed articles, this suggests that studies published after 2013 could have yielded peer-reviewed publications that would not have existed yet when this exercise was conducted.

Nonetheless, if we assume the publications table in ESPIS is reasonably complete through 2013, this significantly narrows the scope of potentially "missing" publications compared to a 10- to 20-year lookback period. In addition to helping narrow our search for studies, this decision rule can also help guide our treatment of citations in assessments. If we find a citation in an assessment to an article that is not currently in ESPIS, we can review the article to determine association with an ESP study, particularly if the article was published since 2015. IEc will also include a survey question for BOEM staff who develop environmental studies to list any peer-reviewed articles they authored that were published in 2015 or later.

Following the interim progress meeting and discussions with the ESPIS team, IEc made efforts to identify any updated "authoritative" sources of peer-reviewed publications and explored methods for finding articles that are not on an authoritative list. Our scoping interview with the Alaska Office resulted in obtaining an updated *Alaska OCS Region, Fully/Partially Funded or Data/Sample Contribution Peer Reviewed Publications* list. This is an especially useful resource because all the publications on the list are related to

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[10] IEc will request technical summaries from 2016-2019 if they could be a resource for additional publications. However, if the ESPIS team is confident that any information on publications is already documented in ESPIS for those years, we would not need the technical summaries.

[11] SCImago Journal & Country Rank (http://www.scimagojr.com/journalsearch.php), CrossRef (http://www.crossref.org/), The DOI® [Digital Object Identifier] System (http://www.doi.org/), US Dept. of the Interior, USGS Publications Warehouse (http://pubs.er.usgs.gov/), US Dept. of Commerce, NOAA Central Library (http://www.lib.noaa.gov/), Google Scholar™ (http://scholar.google.com/).

an ESP study – if any of these publications were cited in an assessment, this would indicate a link to the ESP. Preliminary work with the Alaska Publications lists indicates that there is substantial overlap with publications already reported in ESPIS, but there may be up to 330 additional publications that could be added to the list. The list does not directly cite back to the original BOEM study, which may limit some of the metrics produced from this data source, but when information is available IEc will develop this publication to study connections. IEc's initial analysis of the list suggests that a subset of publications can be matched to the original study based on study title, and others can be matched by searching for the publication online and reviewing the acknowledgment section for the BOEM contract number. Neither of these methods is definitive; for example, a sample of publications showed that they only sometimes provide the BOEM contract number in the acknowledgements section. In addition to continuing to search based on study title and obligation number, IEc plans to use other criteria that the ESPIS team used in their *Enhancement of the Environmental Studies Program Information System and Marine.Cadastre.gov* report, such as: principal investigators/ project managers, conducting entity, time frame, geographic region, subject matter, and methodology.

In addition, the Headquarters Division of Environmental Assessment provided the appendix to a draft EIS that cites the studies that informed the 2022–2027 National OCS Oil and Gas Leasing Program Programmatic EIS analysis. Although this assessment falls outside the scope of our study period, the appendix provides an excellent example of a document that clearly links the ESP studies used to inform a BOEM assessment.

IEc also asked managers during the scoping interviews if there are specific journals where most peer-reviewed articles based on ESP studies are published. Managers suggested that this varies by discipline and subject area and were numerous. IEc will not limit our search to these journals, but we may focus a greater share of attention on them, if a more open-ended search yields limited results.

In addition to the efforts described above, IEc conducted a variety of searches in Scopus to explore whether this could be a viable source for identifying additional peer-reviewed publications. These searches included the titles of study reports and related publications currently in ESPIS (the latter to determine how well these are represented in Scopus); study authors; and funding source (BOEM, MMS, and BOEMRE, as well as ESP). These searches had a lower-than-expected success rate; Scopus does not have a comprehensive record of all scientific journals in which BOEM related publications are published. Although Scopus has many relevant journals, the years of coverage are incomplete. This suggests that sources other than Scopus (e.g., Google Scholar) should be consulted, which is consistent with the ESPIS team's approach. That said, there are two Scopus-related topics that merit follow-up: First, IEc will check the coverage of journals that were specifically cited in the scoping interviews. Second, while we found 478 publications in Scopus that acknowledge BOEM or its predecessors as a funding source, only 56 of these publications are currently in ESPIS. This may be because the publications are not directly related to the ESP, or they may be missing from ESPIS. We will share our list with the ESPIS project team for review and discussion.

IEc will continue to work with BOEM to develop our approach for identifying additional publications and to ensure that any additional publications we identify meet BOEM's criteria.

In addition to the aforementioned efforts, IEc will continue to collect and consolidate the list of related environmental study publications from two known additional sources (i.e., ESP-PAT and the *Alaska OCS Region, Fully/Partially Funded or Data/Sample Contribution Peer Reviewed Publications* list), and other sources that might arise during implementation of the evaluation.

Overall, IEc will use environmental studies to help answer the following evaluation questions based on the methods described in the Analytical Approaches section:

- **Q1. How well do BOEM environmental studies inform BOEM environmental assessments?**
    1. How are the study results used internally (consider both final and interim results)?
        a. Do study results inform mitigation measures, NEPA reviews, consultations, models, follow-on studies, etc.?
    2. How are products other than the final study report (e.g. journal articles) used in assessments?
- **Q2. How well do assessments inform studies?**
    1. Are information needs identified through the assessment process being developed into studies?
        a. If yes, how do the results of the studies address the information needs identified in the study profiles?

#### ENVIRONMENTAL ASSESSMENTS

There is no central repository for environmental assessments that mirrors the ESPIS database for studies, though many BOEM environmental assessments are publicly available on web pages specific to individual BOEM regions and programs, as well as through a query tool provided by the Bureau of Safety and Environmental Enforcement.[12] To amass as complete an inventory of environmental assessments as possible, IEc employed an automated process known as web scraping. The web scraping process used an RStudio-based code and twenty-four search terms.[13] We identified the search terms

[12] The query tool is available at the following link: www.data.bsee.gov/Other/DiscMediaStore/ScanPlans.aspx

[13] The following search terms were used: biological assessment; biological opinion; regional projects; lease and site assessment; Pacific OCS region NEPA activities; Gulf of Mexico EA; public comment; economic analysis; regulatory impact analysis; cost-benefit analysis; oil spill risk analysis (OSRA); Section 7 consultation; National Historic Preservation Act (NHPA); Coastal Zone Management Act (CZMA); Marine Mammal Protection Act (MMPA); Endangered Species Act (ESA); National Environmental Policy Act (NEPA);

based on initial research of the types of assessment documents that BOEM prepares, a review of the BOEM website, discussions during the October 2019 orientation meeting, and feedback received as part of the Interim Progress Meeting in February 2020. The feedback received from BOEM allowed IEc to expand the search term list, discard certain categories of documents not considered by BOEM to be assessments for the purposes of this project, and more thoughtfully consider an approach to collecting the various types of assessments produced by the Gulf of Mexico region.[14] Briefly, the web scraping process involved first developing a code specifying search terms to feed into the search engines on BOEM's website. When executed in RStudio, the code identified webpages with downloadable files associated with each search term, downloaded the files, and organized them into folders. The code then produced an Excel spreadsheet containing web addresses (URLs) and file names for the files that were downloaded.

IEc consolidated all results into a single Excel spreadsheet to serve as a comprehensive inventory of 3,743 documents. This process identified a variety of documents, including many that do not meet the definition of environmental assessments, as previously described. Specifically, the types of documents that were not classified as environmental assessments for this evaluation include the following:

- Compliance documents that were prepared by another agency (i.e., were not BOEM-led), such as Biological Opinions and NEPA Environmental Assessments and NEPA Environmental Impact Statements that include BOEM as a cooperating agency.[15]
- Documents prepared by a third party not on behalf of BOEM (i.e., were not BOEM-led), that do not list BOEM as a cooperating agency, such as compliance documents that review the potential impacts of certain actions.[16]
- Technical reports and studies contained within ESPIS.
- Applications and permit approval documents.
- Post-lease environmental assessments and MfRs by the Gulf of Mexico region. After further consideration, including feedback from BOEM staff, IEc determined that the pre-lease NEPA documents are sufficient for the purposes of this project, and expanding to include post-lease assessments would drastically increase the scope of review without necessarily providing new information related to how the feedback loop functions. IEc will review any post-lease

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notice to operator; notice(s) to lessee(s) (NTL); environmental assessment (EA); environmental impact statement (EIS); and section 7 environmental assessment, Section 106, and 13795 marine sanctuaries.

[14] The search terms did not identify tribal consultations; therefore, as part of the evaluation, we will reach out to BOEM staff to gather and add consultation-related documents to the inventory of assessments.

[15] External assessments for which BOEM is a cooperating agency are relevant to the Year 3 analysis for this project, which considers the use of BOEM studies outside of the agency.

[16] External assessments that were found through searches of BOEM's website are relevant to the Year 3 analysis for this project, which considers the use of BOEM studies outside of the agency.

assessments and MfRs identified during the interviews to provide examples of how these documents are developed and make connections to studies, where possible.

- Planning and policy documents that contain no new analysis or results, such as Records of Decision (RODs), NEPA guidance documents, and Notices to Lessees (NTLs). It should be noted that in answering Evaluation Question 1(a) we will look at NTLs; however, we will do so in the context of treating NTLs as a policy document rather than a type of assessment. Specifically, we will ask interviewees to identify examples where NTLs were informed by assessments that were in turn informed by studies. IEc will review the NTLs identified during the interviews to confirm the connections (to the extent possible based on the written record) to provide examples of where studies informed assessments, which informed NTLs. Additionally, to the extent that BOEM staff identifies specific RODs that were informed by supplemental analyses within MfRs that were not included in the EIS, we will include the relevant MfRs in the inventory of assessments.
- Documents otherwise categorized as assessments but published outside the time bounds (1/1/1999 to 12/31/2019).

In total, IEc identified 256 environmental assessments through the web scraping process, review of an EPA NEPA document repository, and direct communications with BOEM staff.[17] A complete summary of the documents collected through the web scraping process, downloaded from the EPA repository, and/or received directly from BOEM staff and subsequently identified as environmental assessments is provided in Appendix E. IEc reviewed each potential assessment and determined whether it could be classified as one of the types of documents presented in Exhibit 9, or whether it should be excluded.[18] Once classified as an assessment, IEc coded each by type of document, year, region, and program. The number of assessments collected per document type is presented in Exhibit 9, while Exhibit 10 presents temporal trends in document types.

The inventory of assessments compiled by IEc aligns with the known purposes of BOEM environmental assessments, as described in Section II. Most of these environmental assessments are documents prepared for the purpose of complying with federal laws and ensuring potential impacts of proposed actions are minimized to the extent possible. IEc found NEPA analyses, NHPA findings documents, essential fish habitat assessments, ESA Section 7 biological evaluations and assessments, and a suite of documents otherwise drafted by BOEM as supporting analyses or assessments to comply with environmental regulations (Exhibit 9). For example, supporting analyses may be

[17] The number of unique assessments has shifted over time due to inclusion or exclusion of certain documents and/or grouping related documents together (e.g., grouping a FONSI with its associated EA).

[18] IEc coded each assessment based on its overarching purpose, such that each assessment was coded as a single document type. However, NEPA documents may include other compliance analyses, such as Section 106 Evaluations, although those compliance analyses are not necessarily always part of a broader NEPA document framework (i.e., there are some stand-alone Section 106 Evaluation assessments).

assessments of recoverable resources, assessments of resources for restoration purposes, oil and gas production rate forecasts, or reviews of existing and emerging technologies. Since 1999, the number of assessments has increased, with the majority of assessments coded as NEPA-related analyses and only a small number of diverse "other" documents, such as those assessments coded as essential fish habitat assessments or cost-benefit analyses (Exhibit 10).

A rigorous evaluation requires as complete as possible an accounting of the types and topics of BOEM environmental assessments. This is because some types of assessments, which may not typically be made publicly available, address relatively niche but nonetheless important issues related to BOEM program activities. The evaluation process should not exclude these types of assessments. While it may not be possible to collect and code all environmental assessments, IEc recognizes that additional work may be required to continue to adapt the inventory of assessments. Based on discussions with BOEM staff as to the completeness of the inventory, in Spring 2020, we revised our initial inventory of assessments to include additional documents. IEc acquired additional environmental assessments through supplementary web scraping using the same RStudio code to probe additional results pages, accessing archived BOEM web pages for review, identifying BOEM documents which appear to be no longer publicly available so that BOEM staff could provide these directly, and requesting feedback from BOEM staff based on the summarized list of assessment documents provided in the outline.

While the inventory may continue to adapt based on new information received, we do not anticipate large-scale changes to the inventory of assessments aside from the addition of documents from BOEM staff or the addition of specific example documents raised during interviews. One targeted effort to complete the inventory as part of the evaluation will be reaching out to BOEM staff to gather any information on tribal consultations that may meet the definition of an assessment. Our assessment search did not identify any of these documents. IEc will work with BOEM to identify these documents and determine whether they should be included in the evaluation.

IEc will use assessment documents to help answer the following evaluation questions, based on the analytical approaches described in the following section:

- **Q1. How well do BOEM environmental studies inform BOEM environmental assessments?**
    1. How are the study results used internally (consider both final and interim results)?
        a. Do study results inform mitigation measures, NEPA reviews, consultations, models, follow-on studies, etc.?
    2. How are products other than the final study report (e.g. journal articles) used in assessments?
- **Q2. How well do assessments inform studies?**
    1. Are information needs identified through the assessment process being developed into studies?

a. If yes, how do the results of the studies address the information needs identified in the study profiles?

- **Q3. How does the feedback loop function?**

2. How are assessment information needs identified?

**EXHIBIT 9. TOTAL ASSESSMENTS PER DOCUMENT TYPE***

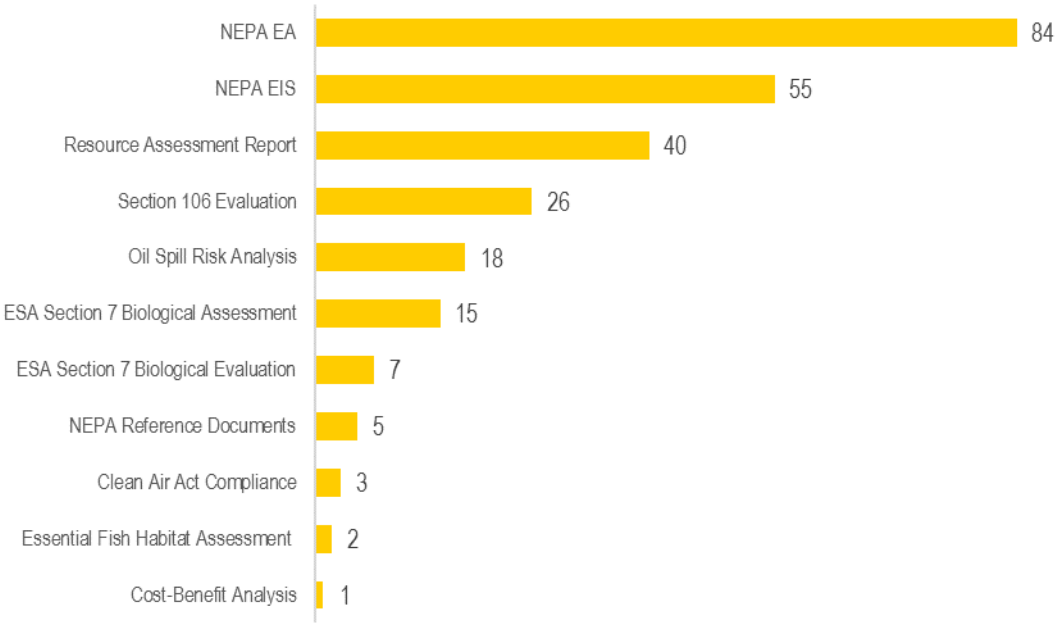


**EXHIBIT 10. TOTAL ASSESSMENTS PER DOCUMENT TYPE, OVER TIME***

| | '99 | '00 | '01 | '02 | '03 | '04 | '05 | '06 | '07 | '08 | '09 | '10 | '11 | '12 | '13 | '14 | '15 | '16 | '17 | '18 | '19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NEPA Environmental Assessment | | 1 | 2 | 4 | 4 | 5 | 4 | 3 | 4 | 5 | 5 | 5 | 7 | 6 | 5 | 9 | 5 | 4 | 2 | 2 | 2 |
| NEPA Environmental Impact Statement | | | 2 | 2 | 3 | | | 1 | 6 | 1 | 1 | | 3 | 5 | 3 | 7 | 4 | 9 | 6 | 2 | |
| Resource Assessment Report | 1 | 3 | 4 | 2 | 3 | 2 | 3 | 4 | 5 | 2 | 5 | | | 1 | | | | 2 | 3 | | |
| Section 106 Evaluation | | | | | | | | | | 1 | | 1 | 2 | 5 | 1 | 2 | 3 | 4 | 3 | | 4 |
| Oil Spill Risk Analysis | | 4 | | 4 | | 1 | | | 3 | | | | | 1 | 1 | | 1 | 1 | 2 | | |
| ESA Section 7 Biological Assessment | | | | | | | | | | 2 | | | 1 | 4 | | 3 | 2 | 1 | | 1 | 1 |
| ESA Section 7 Biological Evaluation | | | | | | | | 2 | 1 | 1 | 1 | | 2 | | | | | | | | |
| NEPA Reference Documents | | 1 | | | | | | | | | | | | | | 1 | 1 | | 1 | | 1 |
| Clean Air Act Compliance | | | | | | | | | | | 1 | | | | | | | 2 | | | |
| Essential Fish Habitat Assessment | | | | | | | | | | | | | | | | | | 1 | | | 1 |
| Cost-Benefit analysis | | | | | | | | | 1 | | | | | | | | | | | | |

* IEc coded each assessment based on its overarching purpose, such that each assessment was coded as a single document type. However, NEPA documents may include other compliance analyses, such as Section 106 Evaluations, although those compliance analyses are not necessarily always part of a broader NEPA document framework (i.e., there are some stand-alone Section 106 Evaluation assessments).

### SURVEY

IEc will conduct an online survey of all BOEM technical staff that work on environmental studies and/or environmental assessments. Based on information from the scoping interviews, the total number of individuals that fit these criteria is approximately 176. Due to the small number of individuals that fall within the defined universe, IEc will aim to survey everyone in the universe; we will request names and emails from the managers in each office/region. IEc will program the survey and generate a unique URL for each survey respondent. Exhibit 11 displays the breakdown by office in anticipated number of survey respondents.

**EXHIBIT 11. ANTICIPATED SURVEY RESPONDENTS, BY OFFICE**

| OFFICE/REGION | ANTICIPATED NUMBER OF SURVEY RESPONDENTS | OFFICES WITH STAFF INVOLVED WITH ENVIRONMENTAL ASSESSMENTS OR ENVIRONMENTAL STUDIES |
|---|---|---|
| **Headquarters** | **38** | • Office of Environmental programs<br>  • Division of Environmental Assessment (DEA)<br>  • Division of Environmental Sciences (DES) |
| **Renewable Energy** | **18** | • Environment Branch |
| **Marine Minerals** | **6** | • Marine Minerals Division |
| **Gulf of Mexico** | **75** | • Majority of staff are in the Office of Environment (all sub-branches).<br>• Some staff may be in the Leasing and Plans or Resource Evaluation offices.<br>• Office of Emerging Programs (contributes to Marine Minerals). |
| **Pacific** | **14** | • Office of Environment<br>  • Environmental Assessment<br>  • Environmental Sciences |
| **Alaska** | **25** | • Office of the Environment<br>  • Environmental Sciences Management<br>  • Environmental Analysis 1<br>  • Environmental Analysis 2<br>• Some individuals in Office Resource Evaluation (known)<br>• Some individuals in Leasing and Plans (known)<br>• Some individuals under regional director (known) |
| **Total:** | **176** | |

Using this approach, we will only survey relevant contacts who work on studies and assessments, and we will know the organizational affiliations of survey respondents, which will be important for the SNA portion of the survey (see below).

The survey will provide data for the following evaluation questions:

- **Q1. How well do BOEM environmental studies inform BOEM environmental assessments?**
    1. How are the study results used internally (consider both final and interim results)?
        a. Do study results inform mitigation measures, NEPA reviews, consultations, models, follow-on studies, etc.?
    2. How are products other than the final study report (e.g. journal articles) used in assessments?
- **Q2. How well do assessments inform studies?**
    1. Are information needs identified through the assessment process being developed into studies?
        a. If yes, how do the results of the studies address the information needs identified in the study profiles?
        b. If not, why?
- **Q3. How does the feedback loop function?**
    1. How are the results of studies communicated internally (consider both final and interim results)?
        a. Are the results presented internally?
        b. Are the results published in ESPIS?
        c. Are the results shared using the ESP-PAT tool?
    2. How are assessment information needs identified?
        a. Who identifies information needs?
    3. Once identified, how are the information needs communicated internally?
        a. Who communicates information needs?

Appendix B provides a draft survey questionnaire. Exact wording of the survey questions may be updated as we approach implementation. The survey questions will be closed-ended and will take approximately 25 minutes to complete through a web-based survey host. The survey will have two components: (1) an anonymous portion for collecting information on current behaviors and preferences and (2) a component aimed at collecting information on individuals' connections to other individuals across the Bureau and external to the Bureau for Social Network Analysis (SNA).[19] Although the first component of the survey responses will remain anonymous, for each respondent IEc will

[19] Year 3 is focused on looking outside of BOEM, including how well BOEM is communicating science to external users and whether BOEM's assessments and consultations are being used by other federal or state agencies. Year 3 will build on the internal efforts; to avoid administering a similar survey to internal BOEM staff in sequential years, the survey in Year 2 will request information pertaining to external contacts.

ask questions to confirm the type of respondent, e.g., office, percent of time spent conducting assessments vs. studies, etc.

The SNA asks respondents to report the individuals they interact with to complete their environmental studies and environmental assessment related work, and to report information about the nature of their relationship with each individual. IEc recognizes that for some individuals this may be a substantial number of people. Therefore, to limit the number of contacts that a respondent needs to provide, the survey will only ask for contacts that respondents has interacted with within the last 12 months. This will reduce the recall burden on respondents and should help to limit the number of contacts that need to be provided.

For the internal SNA, the survey asks respondents to only include contacts where the frequency of interaction is "at least once a year." We understand this may still leave some individuals with many contacts. However, knowing that some individuals communicate with many other BOEM personnel would provide valuable information. It would be particularly valuable to know the extent to which these relationships are reciprocated (e.g., Person A identifies Person B, and Person B identifies Person A).

For the external SNA, we suggest narrowing the scope as follows:

- First respondents will be asked to provide the five (5) most important **organizations** they interact with.
- After answering the previous question, respondents will be asked to provide at least one **individual** contact at each organization. The individual contact is necessary so that we know the appropriate person(s) to send the survey to at the external organization.

For outreach to external contacts, IEc will work closely with BOEM to ensure appropriate communication with outside organizations. A survey question asks BOEM respondents to indicate if they have concerns about sending the survey to the individual contact, and to describe those concerns. We will work through BOEM's established communications protocols for all external contacts. In particular, we recognize the importance of agency interactions with tribes; IEc has experience working with tribes and will work through agency protocols if tribal contacts are listed as external contacts for the SNA.

If BOEM staff indicate some external contacts should not be contacted, we will still have information about who those contacts are, although we will not be able to follow up with those contacts.

Finally, prior to full survey deployment, IEc will pre-test the survey with three to five respondents from the sample populations. The pre-test will help determine the survey response time, the wording and flow of questions, and other information that can improve the survey. IEc will use feedback from the pre-test to revise the survey as needed prior to full deployment.

### INTERVIEWS

The goal of conducting interviews is to collect in-depth qualitative information about the environmental studies and assessments feedback loop. IEc will use interviews to answer the following evaluation questions:

- **Q1. How well do BOEM environmental studies inform BOEM environmental assessments?**
    1. How are the study results used internally (consider both final and interim results)?
        a. Do study results inform mitigation measures, NEPA reviews, consultations, models, follow-on studies, etc.?
    2. How are products other than the final study report (e.g. journal articles) used in assessments?
- **Q2. How well do assessments inform studies?**
    1. Are information needs identified through the assessment process being developed into studies?
        a. If yes, how do the results of the studies address the information needs identified in the study profiles?
        b. If not, why?
- **Q3. How does the feedback loop function?**
    1. How are the results of studies communicated internally (consider both final and interim results)?
        a. Are the results presented internally?
        b. Are the results published in ESPIS?
        c. Are the results shared using the ESP-PAT tool?
    2. How are assessment information needs identified?
        a. Who identifies information needs?
    3. Once identified, how are the information needs communicated internally?
        a. Who communicates information needs?
    4. If changes to the feedback process are needed, what would they be and who would be responsible for implementing the changes?

IEc will conduct semi-structured Microsoft Teams interviews with select BOEM employees involved in environmental studies or assessments. Each type of interviewee will answer a distinct set of interview questions based on their role. As a semi-structured interview, the interviewer will have the opportunity to ask follow-up questions based on initial responses. Interviews will be selected as a purposive sample to ensure adequate representation across key offices and staff roles. The sample of interviews will not be statistically representative, and IEc will not attempt to make quantitative inferences about

implementation of environmental studies, assessments, or the feedback loop based on the results of the interviews. Interviews will provide detailed information of how the feedback loop is implemented across the agency and may help explain how or why the feedback loop is or is not working. IEc proposes to conduct a total of 40 interview sessions as part of the implementation phase of the evaluation. With permission of the interviewee, IEc will record all interviews to ensure we accurately capture the conversation. The draft interview guides are available in Appendix A of this document.

IEc is currently working to identify interviewees with the help of the BOEM Evaluation Team. To ensure transparency in the selection process and adequate representation across BOEM, the BOEM Evaluation Team developed the following interview selection criteria:

- Representation from each regional and program office.
- Representation of both staff and managers. Managers may include some senior managers that utilize studies or assessments but do not directly work on studies or assessments.
- Various subject-matter experts.

Exhibit 12 below breaks out the estimated number of interviews by office/region; these estimates are generally proportional to the number of staff that work on environmental studies or assessments in that office or region. We will request the BOEM Evaluation Team's assistance in identifying and contacting the interviewees. These interviews will help validate, explain, and interpret our initial observations from the coding analysis and information needs tracing analysis. We anticipate interviewing managers including those who participated in the scoping interviews during the Base Year, and other senior managers who would not be taking the online survey. We will also conduct interviews with anyone who plays a role that relates to the feedback loop but may not have been included in the survey – e.g., model developers who do not directly work on studies and assessments. The interviews will also probe examples of the "feedback loop" in practice, and how studies and assessments have helped inform BOEM's policy decisions.

Prior to each interview, the BOEM Evaluation Team or IEc will provide the interviewee with background information about the evaluation and the relevant interview guide.

**EXHIBIT 12. ESTIMATED INTERVIEWS DISTRIBUTED BY BOEM OFFICE/REGION**

| OFFICE/REGION | ESTIMATED OF INTERVIEWS |
|---|---|
| Headquarters | 8 |
| Renewable Energy[20] | 4 |
| Marine Minerals | 2 |
| Gulf of Mexico | 17 |
| Pacific | 3 |
| Alaska | 6 |
| **Total** | **40** |

### ESP-PAT

The environmental studies program-performance assessment tool is an internal BOEM mechanism for capturing information on the effectiveness and use of ESP studies in fulfilling the Bureau's information needs. The tool was developed in 2005 but has had relatively limited use: during the 2005-2019 time there have been a total of 620 completed ESP studies with approximately 300 of these studies reported in ESP-PAT.[21] Although the information provided in ESP-PAT does not cover the entire study list, the information for the available studies is directly relevant to the evaluation questions. In particular, data derived from questions seven and nine of the ESP-PAT submission form provide clearly documented information regarding the agency's use of the study and publications emerging from the study. ESP-PAT will be used for the following evaluation questions:

- **Q1. How well do BOEM environmental studies inform BOEM environmental assessments?**
    1. How are the study results used internally (consider both final and interim results)?
        a. Do study results inform mitigation measures, NEPA reviews, consultations, models, follow-on studies, etc.?
    2. How are products other than the final study report (e.g. journal articles) used in assessments?
- **Q2. How well do assessments inform studies?**

[20] Feedback received during the Evaluation Methodology Presentation indicated that the Renewable Energy Office is anticipating increased growth in the upcoming months; this suggests that additional interviews with BOEM staff who work on renewable energy may be appropriate. IEc will work with BOEM to identify the appropriate individuals to interview.

[21] IEc was provided a copy of the ESP-PAT database from May 5, 2020.

1. Are information needs identified through the assessment process being developed into studies?
    a. If yes, how do the results of the studies address the information needs identified in the study profiles?
    b. If not, why?

- **Q3. How does the feedback loop function?**
    1. How are the results of studies communicated internally (consider both final and interim results)?
        c. Are the results shared using the ESP-PAT tool?

### OTHER PROGRAM DOCUMENTS

BOEM program documents provide important information for understanding current processes, supplementing other sources of information, and for providing context when interpreting findings. IEc uses the general term "other program documents" to refer to multiple data sources including (but not limited to):

- Information on BOEM's website.
- Strategic guidance documents (e.g., Environmental Studies Program Strategic Framework; Division of Environmental Assessment, Strategic Framework).
- Internal documents provided by programs and regions, so far these include:
    - Organizational charts for multiple programs and offices.
    - Process maps for assessment-related processes.
    - Strategic Framework for Division of Environmental Assessment.
    - Region priorities for NSL funding list.
    - *Alaska OCS Region, Fully/Partially Funded or Data/Sample Contribution Peer Reviewed Publications* – this document supplements data in the publications table of ESPIS, approximately 300 additional publications were identified in this document that are not currently on ESPIS.
    - NEPA analyses under development describing current approach to identifying key topics (resources and impact categories).
    - Program-specific stakeholder list.
- Other potential process documents that may emerge during interviews (e.g., tracking spreadsheets for study ideas).

Other program documents will help answer the following evaluation questions:

- **Q3. How does the feedback loop function?**
    1. How are the results of studies communicated internally (consider both final and interim results)?

a. Are the results presented internally?

b. Are the results published in ESPIS?

c. Are the results shared using the ESP-PAT tool?

Appendix C provides summary information on each BOEM office involved in this evaluation. This serves as an initial step in understanding contextual information on the characteristics of each office for better interpreting the results of the evaluation.

### ANALYTICAL APPROACHES

In the rest of this section, we discuss our analytical approaches for the evaluation, drawing on the environmental studies (and associated BOEM publications and peer-reviewed articles), environmental assessments, interviews, survey, ESP-PAT and other program documents, as appropriate. The analytical approaches include topic trend analysis, citation analysis, information needs tracing, survey analysis, interview coding and qualitative analysis, and social network analysis.

### TOPIC TREND ANALYSIS[22]

Topic trend analysis is focused on exploring the relationship between the topics addressed by environmental studies and information topics used in environmental assessment documents. The Data Sources section (specifically the environmental studies and environmental assessments sections) described the processes IEc used to develop the consolidated datasets and documents for use in this analysis. This section describes IEc's approach to coding and analyzing the information in each data source and using the coded information to examine topic trends over time.

As a starting point for identifying relevant topics, IEc utilized the topic list, organized by activity and resource, from the BOEM document, *National Environmental Policy Act Documentation for Impact-Producing Factors in the Offshore Wind Cumulative Impacts Scenario on the North Atlantic Outer Continental Shelf*.[23] During the scoping interviews we asked for feedback on the comprehensiveness and meaningfulness of this list to characterize study topics over time. Based on feedback we added topics to characterize the resources and activities of interest more completely. Exhibit 13 displays the topic list used in this analysis.

IEc identified the topic(s) that each environmental study addressed using multiple fields in ESPIS and from information in the study profiles. Relevant ESPIS fields for this coding include keywords, abstract, category, and title. IEc manually coded each study

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[22] IEc's evaluation methodology outline had identified two potential trend analyses: keywords and topics, and information needs. For studies, the "information needs" would be sourced from the study profiles associated with each study; study profiles could only be identified for 252 out of 1,020 of the studies. Although the information will be used as part of the topic trend analysis (where available), information needs trend analyses will no longer be a specific focus. Instead, information needs identified in study profiles and in assessments will be incorporated into the information need tracing approach described below.

[23] Document: BOEM 2019-036.

with the appropriate topics, for both activities and resources, where applicable we assigned multiple activities or resources to a single study.

By their nature, assessments cover a wide range of topics. Based on a review of a selection of assessment documents, IEc targeted specific sections of the assessment documents to determine the most important topics the assessment addresses. These sections include the table of contents; mitigation section; appendices, focused on appendices that indicate in-depth analysis on a topic; and index of common terms. IEc referenced these sections to code each assessment with the relevant topics covered. Initial attempts at relying on software to automatically code the documents identified complexities. Specifically, because of slight differences in how the topics are worded and used across documents, the automated coding did not capture the full set of topics covered in some assessments. In addition, the generic nature of certain topics made it difficult for the automated coding to not only identify all instances of the term, but also identify meaningful uses of the topic. As a result, we found that manual review and topic coding of the assessments was the more efficient and thorough approach. For a small subset of topics, we relied on a keyword query using NVivo.

**EXHIBIT 13. LIST OF TOPICS (ACTIVITIES AND RESOURCES)**

**ACTIVITIES**

- Climate Change
- Dredged Material Ocean Disposal
- Fisheries Use and Management
- Geosequestration
- Land Use and Coastal Infrastructure
- Liquified Natural Gas (LNG) Facilities
- Marine Minerals Extraction
- Marine Transportation, Navigation, and Traffic
- Military Ranges and Civilian Space Program Uses
- Oil and Gas Surveys and Extraction
- Oil Spill*
- Renewable Energy Development (Tidal)
- Renewable Energy Development (Wind)
- Submarine Transmission Lines, Pipelines, Cables, and Infrastructure

Consideration When Implementing Activities
Direct BOEM Activity
Physical Resource
Biological Resource
Socioeconomic / Cultural Resource
**[*]** Added as a result of information obtained from scoping interviews.

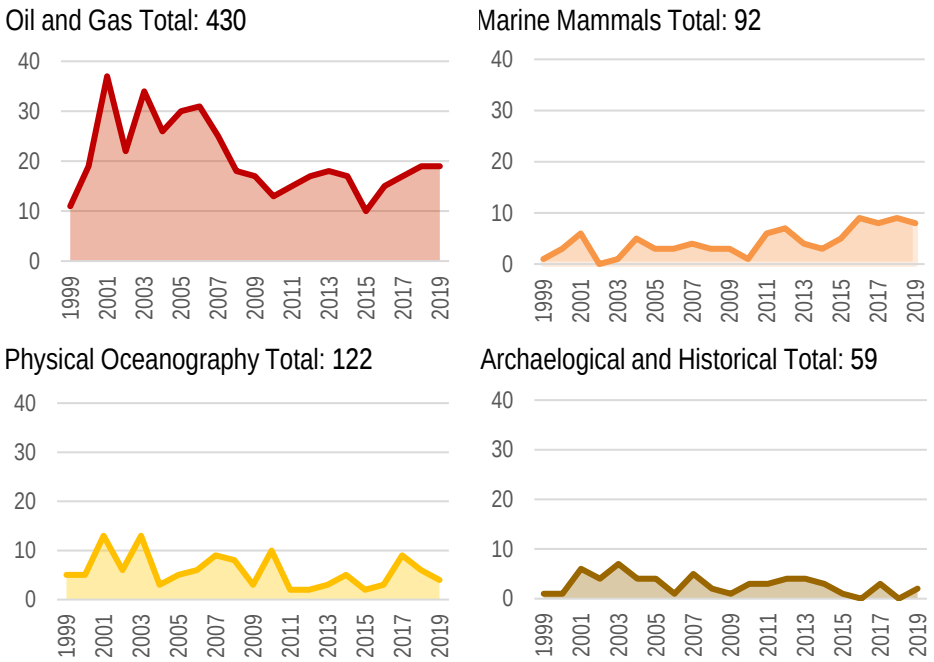
**RESOURCES**

- Acoustic Environment
- Air Quality
- Archaeological and Historic Resources
- Areas of Special Concern
- Benthic Communities
- Birds and Bats
- Chemosynthetic communities / Deep-water coral communities*
- Coastal and Estuarine Habitat
- Commercial and Recreational Fisheries
- Cultural and Vulnerable Coast Communities (non-tribal)*
- Demographics, Employment, Economic Resources, and Env. Justice
- Energy Production and Distribution
- Fish, Essential Fish Habitat, and Threatened and Endangered Fish
- Ice Dynamics*
- Marine Mammals
- Mineral Resources
- Pelagic Communities*
- Physical Oceanography*
- Sea Turtles
- Sediment Transport*
- Subsistence Use*
- Tourism and Recreation
- Tribal Resources*
- Visual Resources
- Water Quality

With topics coded to both studies and assessments, IEc developed preliminary counts of topics over time based on study and assessment year. Exhibits 14 and G-2 present a subset of preliminary data.[24]

The topic trend analysis allows us to examine the relationship between environmental study topics and assessment topics over time. This information does not allow IEc the ability to draw conclusions regarding the causality between study topics and assessment topics over time. However, this will help illuminate the general trends in study topics and may identify specific topics that should be further examined in the interviews. For instance, these trends will serve as a starting point for discussing why topics arose at a given time, and other factors that may influence environmental studies and assessments.

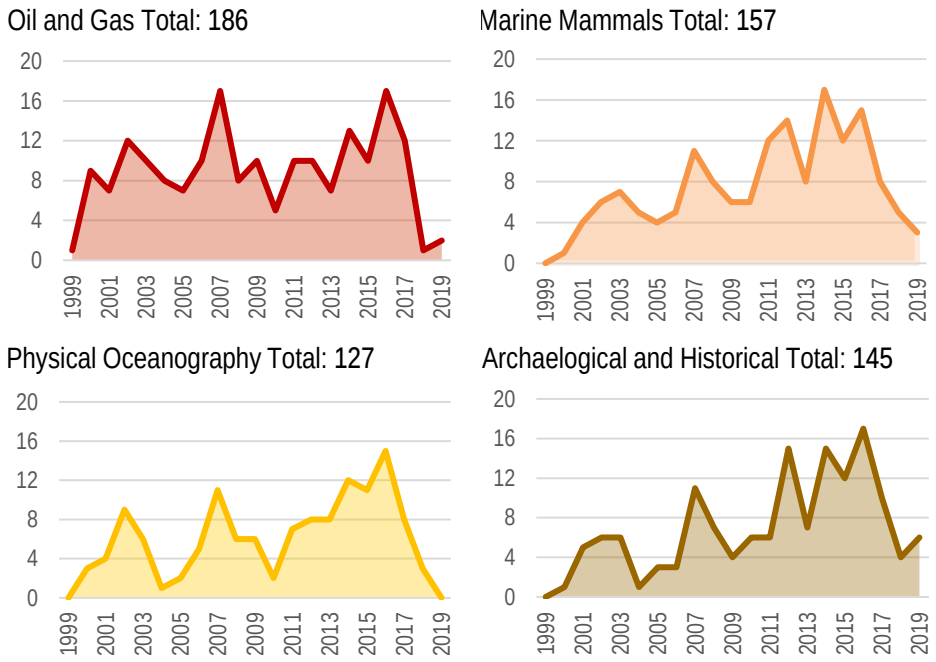
**EXHIBIT 14. TOP ACTIVITY, BIOLOGICAL RESOURCE, PHYSICAL RESOURCE, AND SOCIO-ECONOMIC RESOURCE IN STUDIES, OVER TIME[25]**




[24] As part of the complete evaluation IEc anticipates utilizing an updated version of ESPIS covering information through December 2019; these numbers are subject to change as that information is incorporated into IEc datasets.

[25] Data reflect the end year for the study and is preliminary; additional data cleanup is required.

**EXHIBIT 15. TOP-CITED ACTIVITY, BIOLOGICAL RESOURCE, PHYSICAL RESOURCE, AND SOCIO-ECONOMIC RESOURCE IN ASSESSMENTS, OVER TIME**




Overall, the list of information characterization and metrics examined via topical trend analysis include:

- Count of studies by:
    - Topics.
    - BOEM program office/region.
    - Geographic scope.
    - Year.
- Count of assessments by:
    - Topics.
    - BOEM program office/region.
    - Purpose/ regulatory requirement (i.e., type of assessment).
    - Geographic scope.
    - Year.
- Relationship between environmental study topics and environmental assessment topics over time.

### CITATION ANALYSIS

IEc will search for citations of ESP-funded study documents and associated publications referenced in assessments, as a direct measure of how study results inform assessments.[26]

IEc will use the list of BOEM reports and associated publications in ESPIS, augmented as described above, to query the assessment inventory that we have compiled. We will automate this query as much as possible. For example, we conducted initial proof-of-concept queries using RStudio to search for every "match" between a BOEM report or external publication title and a citation in an assessment. The program returned a result with the name of the assessment and the name of the cited study publication that could then be matched to a unique contract ID (used to connect the publication to the study). We will continue to refine the query process to ensure accurate connections are made between study-related publications and citations in assessments, possibly exploring the utility of using NVivo in addition to RStudio. Additional information on the initial analysis and selected results is provided in Appendix F.

The lessons learned during this proof-of-concept analysis include:

- **Protected or secured documents.** Some of the environmental assessments were protected or secured. This meant that IEc could not extract the references list. Given the size of these files, running the query on the entire document was not feasible and IEc excluded these documents from the preliminary analysis and results.
- **Query terms.** IEc planned to search on author names as well as unique report and publication identifiers (i.e., contract ID). However, we found that author names identified duplicates since authors often had multiple publications and assessment reference lists occasionally used inconsistent formatting (e.g., use of period or spacing for initials, ordering of names). In addition, many citations did not include the contract ID, meaning the contract ID would not be an effective query term to identify publications connected to BOEM studies. IEc determined that report and publication titles produced the cleanest query, but may still need to be refined to ensure appropriate connections are made between assessments and studies.
- **Report and publication titles.** The query included all BOEM report and publication titles, including many that are short and generic; for example, "Risk Analysis" or "Marine Mammals" are both complete titles of BOEM publications. Titles that are this general result in a significant number of false positives, where the query finds these phrases within longer report and publication titles that include these terms. IEc excluded citation analysis results from a select number of reports or publication that have short, generic titles, and will look to refine and improve the query during the evaluation period to address this issue.

[26] We define citations as references to BOEM reports or associated external publications in environmental assessments. We identify citations by reviewing the reference lists in assessments.

- **Timing of studies and assessments.** Assessments between 1999 and 2003 did not have as many citations to BOEM reports and publications as more recently published assessments. This is likely a result of the temporal scope of the project, which involves restricting our analysis to studies developed since 1999. These findings are intuitive, and we will incorporate this context into our subsequent citation analysis to better interpret the results and trends.

As described in the BOEM Published Documents and Outside Publications Associated with Environmental Studies section above, IEc pursued and will continue to pursue efforts to compile additional publications associated with BOEM environmental studies. Despite these efforts, we recognize that our list is unlikely to be comprehensive of all BOEM related publications. To supplement this analysis IEc will utilize other data sources to build evidence of connections between BOEM reports and publications and their use in assessments. Interviews provide an opportunity to inquire about potential BOEM studies and their use in assessments. ESP-PAT also offers a source of information with documented instances where study outputs were used for assessments. These data sources can supplement the citation analysis to capture additional connections. To ensure transparency of information, we will document the source of the connection (i.e., citation; interview; ESP-PAT) and report on these accordingly. After completing the citation search and supplemental data compilation, IEc will organize the results and calculate metrics such as:

- Number and percent of unique study reports and publications and number of unique studies cited in at least one assessment.
- Number and percent of assessments with at least one citation to any BOEM study report or publication.
- Average number of citations of unique study reports and publications and average number of unique studies per assessment.
- Most frequently cited study reports and publications and most frequently cited studies (overall and broken out by program/region, time period, and topic).
- Types of assessments (e.g., NEPA, EIS, etc.) that most frequently cite BOEM study reports and publications overall and broken out by program/region and time period).
- Number of unique studies with no citations in assessments by year and topic.

In addition to this comprehensive analysis, IEc will review a sample of the assessments with citations of BOEM reports or external publications to understand the context for the citations. How we draw the sample will depend on the patterns in the citation data; for example, if a small number of BOEM reports or external publications received a significant percentage of total citations, we might focus our in-depth review on the assessments that cited those reports or publications. If no reports or publications were cited significantly more often than others, a random sample might be appropriate. Based on the results from the initial citation analysis (Appendix F), the focused approach seems likely to work well, given the patchiness of citations across assessment types and years as well as the finding that certain studies are cited more often than others. Together with

feedback from the interviews, we envision this focused approach may provide a chance to develop case studies that capture the differences in how assessments cite to reports or publications.

For each citation in our sample, we will review the assessment(s) to understand what specific information was cited from the report or publication, what part of the assessment the information from the report or publication contributed to, and the importance (based on our best professional judgment) of the cited information to the assessment. We will also use the interviews to explore the context and importance of studies that were cited.

While providing useful insight into direct examples of BOEM studies informing assessments, we recognize that the citation analysis will not fully answer all our research questions and is one component of a comprehensive analysis of the feedback loop. A finding that some fraction of studies cannot be directly traced to assessments is not an indication that the studies failed to achieve their purpose. The scoping interviews with BOEM managers highlighted that some studies are undertaken based on BOEM requirements to monitor conditions or impacts of activities, and others are developed in anticipation of future assessment needs. The scoping interviews also highlighted the importance of BOEM studies for informing assessments and policies outside of BOEM (although outside the scope of the internal evaluation, we will evaluate this during Year 3 of the evaluation).

### INFORMATION NEEDS TRACING

Information needs tracing is an analysis to help understand how well assessments inform studies. Scoping interviews emphasized that the source of information needs for developing studies are less likely to come from formally documented "incomplete or unavailable information" sections in environmental assessment documents and are more likely to arise in anticipation of upcoming assessments.[27] The approach included in the evaluation outline accounted for the former, but not the latter scenario. The latter reflects that information needs are responsive to and identified within the assessment process, though evidence would not necessarily be documented within assessments. To account for the identification of information needs to be addressed through studies in anticipation of a forthcoming assessment, IEc proposes reviewing ESP-PAT and the information needs section of the study profiles to identify information needs which attribute assessments as the driving factor. This section explains the process for identifying information needs in each of the data sources and tracing information needs.

In some cases, information needs are identified in the "incomplete or unavailable information" sections of assessment documents. For example, when reviewing BOEM NEPA documents for identification of study needs, IEc will review the 1502.22 (Incomplete or Unavailable) sections of the document. These sections point out the information need for each topic and resource. Other information needs may be identified

[27] Information needs can also be identified via other mechanisms including direct public solicitation and politically driven "hot topics." The interview and survey analyses will identify and quantify these occurrences.

through targeted keywords such as: uncertain(ty), "data gap," information need, best (information); best available science; best available information; incomplete; unavailable; next step; study; model; range; in lieu of; probabilistic; and professional judgment. These words imply (or could imply) that more information is needed or would be helpful for conducting the assessment.

Using the pre-identified document sections and keywords outlined above, NVivo will read and thematically code text indicating ongoing assessment information needs. IEc may run multiple iterations of the thematic coding to fine-tune the approach and ensure the process is adequately capturing information needs. The preliminary information needs analysis conducted as a proof-of-concept for this method used NVivo to automatically and manually code text from assessment documents (all PDF files). IEc imported each assessment document into NVivo, including appendices and supporting material. The assessment inventory spreadsheet was also imported into NVivo and matched to the PDFs to provide descriptive statistics such as year, type, and region.

The analysis used a variety of keywords to identify potential areas of assessments that discuss information needs, including:

- Information need(s)
- Data gap(s)
- Next step(s)
- Key uncertainty
- Future research

Additional details on the preliminary analysis and selected results are presented in Appendix G.

To provide context for the analysis of topics based on information needs from environmental assessments, IEc will examine the frequency with which environmental assessments clearly identify remaining information needs as part of the assessment. Through the process described above IEc will develop a list of environmental assessments that clearly identify information needs and a list of environmental assessments that do not clearly identify information needs. This information provides the percent of environmental assessments with clearly identified data needs. Metrics emerging from this analysis include:

- Percent of environmental assessments with clearly identified data needs.
- Count of topics identified as information needs in assessments over time.

For those assessments that do have clearly identified information needs, IEc will review the information needs outlined in the available study profiles to determine if the assessment information need can be traced to a specific study profile. As part of this exercise, IEc will account for timing of study profiles and assessments. For example, we anticipate that information needs identified in assessments would be reflected in study profiles developed at the same time or after the assessment was conducted.

IEc will also conduct an analysis of the information needs for the environmental studies for which there are available study profiles (and therefore an associated "information needs" section). ESP-PAT also provides a source of information for documented instances when a study was developed to meet an assessment information need. This analysis will focus on identifying information needs that attribute the need to an anticipated or upcoming assessment. Finally, interviews will also ask respondents to indicate if a study was developed to address a specific information need.

Overall, IEc will compile this information in a table with the following data fields: information need topic, information need type (i.e., anticipated upcoming assessment; past assessment), associated study profile (as-applicable), associated environmental study (as-applicable), and study information need data source (i.e., name of completed assessment, ESP-PAT, study profile, other). The metrics emerging from this information need tracing includes:

- Number of identified environmental assessment information needs tied to an environmental study profile information need and subsequently an implemented study.
- Number of environmental study profile information needs attributing need to an anticipated or upcoming assessment.

### SURVEY ANALYSIS

Survey responses will be quantitatively analyzed and summarized based on the percentage of respondents answering each of the possible responses for the individual questions. Responses will be summarized overall and broken out by type of respondent. The survey responses will provide information for the following metrics:

- Counts and percent distribution of types of knowledge products (BOEM reports, external publications, BOEM models, external peer reviewed articles, gray literature from other Federal agencies, etc.) that respondents have used in the past year to develop assessments.
- Distribution and average agreement of respondents that study results, reports, or associated publications inform each of the following: EIS/EAs, mitigation measures, consultations, NTLs, models, and follow-on studies.
- Number and percent of respondents who have submitted a study profile to management for inclusion in the SDP in the past three years (overall and broken out by program office/region).
- Counts and percent of current information sharing methods (e.g., presentations, reports, ESPIS updates, ESP-PAT, etc.) for receiving information about BOEM studies.
- Counts and percent of respondent preferences (e.g., presentations, reports, ESPIS updates, ESP-PAT, etc.) for receiving information about BOEM studies.
- Distribution and average usefulness of information sharing methods (e.g., presentations, reports, ESPIS updates, ESP-PAT etc.).

- Distribution and average agreement of respondents that ESP-funded studies are useful for their assessment work.
- Counts of sources of information needs (e.g., public; information need from previous assessment; information need identified for upcoming anticipated assessment; etc.) for study profiles.
- Counts and percent of current information sharing methods (discussions, conversations, etc.) for receiving information about information needs, uncertainties, and information needs in environmental assessments.
- Counts of types of methods that respondents use to present or otherwise disseminate study results externally.
- Identification of/counts of reasons why study ideas were not implemented
  (a) Reasons why study ideas included in the SDP were not conducted.
  (b) Reasons why studies that were not in the SDP, were conducted.

### INTERVIEW CODING AND QUALITATIVE ANALYSIS

The interviews will draw on the institutional knowledge and experiences of the respondents to provide insight into how and why linkages from studies to assessments, from assessments to studies, and across BOEM offices are (or are not) present. Additionally, the interviews will elicit suggestions and recommendations on ways to strengthen linkages moving forward.

IEc will analyze responses to each interview question to identify themes and summarize responses. Each response may be applicable to more than one evaluation question. IEc will use qualitative analysis to code each open-ended response. Depending on the complexity of responses, we may use Microsoft Excel or Access, or coding software such as NVivo.[28] We will analyze the interview responses overall and by type of respondent (e.g., national, regional, or cross-program). IEc will summarize the frequency with which each theme was raised overall and by different types of interviewees, and we will identify illustrative quotations that capture issues that interviewees frequently raised. We will summarize the interview findings with charts, graphs, and tables as appropriate. Because interviewees may reveal sensitive information in their responses, IEc will not attribute quotations or associate individual respondents with their responses.

The interview responses will provide qualitative information for the following information and metrics:

- Identification of specific studies that are especially important for currently conducting assessment work.

[28] NVivo is a tool for efficiently organizing, reviewing, and categorizing documents, surveys, or other text-based data. The program has a variety of functions for text analysis and data management and supports multiple document types including PDF and spreadsheet formats.

- Sources of information needs (e.g., public; information need from previous assessment; information need identified for upcoming anticipated assessment; etc.) for developing study profiles.
- Types of informal environmental study data sharing methods.
- Types of formal information sharing methods for environmental studies that occur in each program/regional office (e.g., number of brownbag lunch topics on this per year).
- Types of methods for tracking identified information needs internally (e.g., idea tracking spreadsheet by key person).
- Identification why study ideas were or were not implemented
  (a) Reasons why study ideas included in the SDP were not conducted.
  (b) Reasons why studies that were not in the SDP, were conducted.

Additionally, we anticipate that the interviews will highlight positive examples of influence that exemplify best practices for internal knowledge sharing. In collaboration with the BOEM Evaluation Team, IEc will select examples from the interviews to feature as brief case studies or call-out boxes in the internal evaluation report. These case studies/call-out boxes will describe which studies and assessments were influential, how they informed activities within BOEM, how knowledge was disseminated within BOEM, and how that knowledge was used.

### SOCIAL NETWORK ANALYSIS (SNA)

As discussed in the Data Sources section, the survey will include a set of questions for social network analysis (SNA). IEc will use the survey responses to conduct an SNA focusing on information exchange and knowledge transfer throughout BOEM related to studies and assessments.

SNA involves mapping and characterizing a network, which can be defined as relationships between people or organizations (including offices within an organization). SNA identifies pathways for transmitting ideas, knowledge, information, and/or resources. In BOEM's context, a well-connected, highly functioning network would facilitate the spread of information to ensure that it reaches the right people at the right time to inform study profiles, assessments, and decisions supported by the best available science. Conversely, a fragmented network could lead to a situation in which useful information is not shared with everyone who would benefit from it, potentially resulting in less than optimal outcomes.

SNA looks at the ties (connections) between organizations or individuals (nodes) and quantifies the number and characteristics of those relationships. Relationships are the unit of analysis, although data is collected at the individual level. Once the network of interest is defined, along with expected outcomes because of these relationships, further analysis can be done comparing characteristics of the network (and characteristics of the individuals themselves) and observed outcomes. The typical output from an SNA includes maps and metrics that illustrate the presence and strength of relationships in a

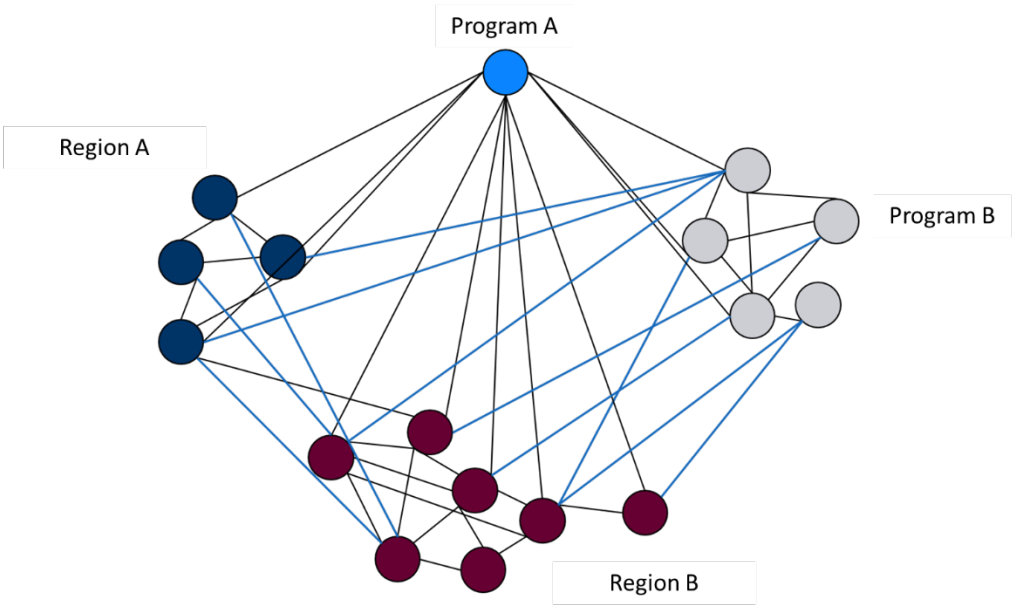
network. This can be used to understand the network structure, possible network influence on outcomes, and people or organizations that could be targeted or connected to achieve better expected outcomes.

SNA will complement the citation analysis and trend analysis of topics, by showing tacit flows of information (e.g., peer-to-peer knowledge sharing) that would not be captured in direct citations and may not be fully captured in the trend analysis.

SNA is generally similar to other types of surveys and statistical analysis but uses specialized software and analyses to map the strength and structure of networks. Steps for conducting the SNA include:

- *Identify the network:* These are the same individuals who will receive the survey. As noted above, in addition to the general survey questions, a separate section of the survey will ask about connections to gather data for the SNA.
- *Collect social interaction data:* The SNA-related survey questions will ask respondents to indicate if they have ties to other people in the network (BOEM). The survey will also ask respondents about the frequency of interactions, the types of information that are shared, directionality (who gives and who receives information), perceived importance of the information, and factors that improve or hamper interactions and information sharing.
- *Clean and analyze the social interaction data:* The results for all respondents will be combined and converted into a data format compatible for conducting SNA, so that connections can be analyzed.
- *Measure network relationships and create network maps:* IEc will calculate metrics of social interactions (see below) and display the results on a social network graph. Graphs show individuals or organizations as points (“nodes”) and their relationships as lines between the nodes (“ties”). Colors, sizes, and shapes may be used to convey information about the characteristics of individual nodes (e.g., different colors could be used to indicate different programs and regional offices). Similarly, the color or thickness of the lines can indicate the strength or frequency of ties between actors. Exhibit 16 provides a hypothetical example of a simple network graph. Several off-the-shelf tools are available to calculate network metrics and graphs, including a variety of open-source SNA software packages (e.g., Gephi, NetworkX) and data visualization software (e.g., NetDraw). IEc will select the appropriate tools based on the specific network questions asked, the size of the network, and desired analyses.

**EXHIBIT 16. NETWORK MAP**




Based on the analysis of the network data, IEc will calculate the following metrics:

- Types of connections/functions of the network.
    - Informal information exchange, e.g., emails, phone calls, and conversations.
    - Formal collaborations, e.g., number of shared workgroup assignments, joint programs, etc.
- Topic interactions between offices/people.
    - Development of study profiles.
    - Conducting assessments.
    - Study profile reviews.
- Number of connections made:
    - By individuals.
    - By organizations (i.e., program offices, regional offices).
- Density of network.
    - Proportion of possible ties in the network that are reported.
- Centrality of network options include (specific metrics will be determined once data are acquired):
    - Degree centrality: Number of connections that each actor has with other actors in the network.

        - In-degree measures incoming relationships, such as receiving information.
        - Out-degree measures outgoing relationships, such as sending information.
        - Freeman's degree combines both in and out degree.
    - Closeness centrality: Distance from an actor to all other actors in the network (i.e., direct and indirect connections); represents how quickly information flows from the actor to all other actors in the network.
    - Betweenness centrality: Position between actors (i.e. if an actor is an intermediary who controls communication flows and without whom certain parts of a network would break apart).
- Strength of ties among actors in a network.
    - Frequency in connections made, i.e., number of communications between actors in a given timeframe (e.g., number of conversations per month).
    - Importance of connections made, i.e., the extent to which each contact helps further the respondent's work.
- Reciprocity among actors in a network.
    - Number and ratio of actors that identify each other as a connection.
- Number and combination of organizational types represented in the network (e.g., program offices, regional offices).

## METRICS SUMMARY

Exhibit 17 below provides a summary of the proposed metrics for conducting the evaluation. For each metric we include the metric type, data source, analytical approach, and associated question that the metric is intended to answer.

### EXHIBIT 17. METRICS SUMMARY

| N | PROPOSED METRIC | METRIC TYPE | DATA SOURCE | ANALYTICAL APPROACH | ASSOCIATED QUESTION |
|---|---|---|---|---|---|
| 1 | Count of studies over time:<br>(a) Topics<br>(b) BOEM program office/region<br>(c) Geographic scope<br>(d) Year | Characterization | Environmental Studies | Topic Trend Analysis | Characterization |
| 2 | Count of assessments over time:<br>(a) Topics<br>(b) BOEM program office/region<br>(c) Purpose/ regulatory requirement (i.e. type of assessment)<br>(d) Geographic scope<br>(e) Year | Characterization | Environmental Assessments | Topic Trend Analysis | Characterization |
| 3 | Relationship between environmental study topics and environmental assessment topics over time | Outcome | Environmental Assessments; Environmental Studies | Topic Trend Analysis | Q1.1; Q2.1 |
| 4 | Number and percent of unique study reports and publications and number of unique studies cited in at least one assessment. | Outcome | Environmental Assessments; Environmental Studies | Citation analysis | Q1.1 |
| 5 | Number and percent of assessments with at least one citation to any BOEM study report or publication. | Outcome | Environmental Assessments; Environmental Studies | Citation analysis | Q1.1; Q1.2 |
| 6 | Average number of citations of unique study reports and publications and average number of unique studies per assessment. | Outcome | Environmental Assessments; Environmental Studies | Citation analysis | Q1.1 |
| 7 | Most frequently cited study reports and publications and most frequently cited studies (overall and broken out by program/region, time period, and topic). | Outcome | Environmental Assessments; Environmental Studies | Citation analysis | Q1.1 |

| N | PROPOSED METRIC | METRIC TYPE | DATA SOURCE | ANALYTICAL APPROACH | ASSOCIATED QUESTION |
|---|---|---|---|---|---|
| 8 | Types of assessments (e.g., NEPA, EIS, etc.) that most frequently cite BOEM study reports and publications overall and broken out by program/region and time period). | Outcome | Environmental Assessments; Environmental Studies | Citation analysis | Q1.1; Q1.2 |
| 9 | Number of unique studies with no citations in assessments by year and topic. | Outcome | Environmental Assessments; Environmental Studies | Citation analysis | Q1.1 |
| 10 | Percent of environmental assessments with clearly identified data needs | Process | Environmental Assessments | Information Needs Tracing | Q3.2 |
| 11 | Count of topics identified as information needs in assessments over time. | Process | Environmental Assessments | Information Needs Tracing | Q3.2 |
| 12 | Number of identified environmental assessment information needs tied to an environmental study profile information need and subsequently an implemented study | Outcome | Environmental Assessments; Environmental Studies; ESP-PAT; Interviews | Information Needs Tracing | Q2.1 |
| 13 | Number of environmental study profile information needs attributing need to an anticipated or upcoming assessment. | Process | Environmental Assessments; Environmental Studies | Information Needs Tracing | Q3.2 |
| 14 | Counts and percent distribution of types of knowledge products (BOEM reports, external publications, BOEM models, external peer reviewed articles, gray-literature from other Federal agencies, etc.). respondents have used in the past year to develop assessments | Outcome | Survey | Survey analysis | Q1.1; Q1.2 |
| 15 | Distribution and average agreement of respondents that study results, reports, or associated publications inform each of the following:<br>(a) Environmental impact statements (EIS)/ Environmental Assessments analyses<br>(b) Mitigation measures<br>(c) Consultations<br>(d) Notices to Lessees and Operators (NTLs)<br>(e) Models<br>(f) Follow-on studies | Outcome | Survey | Survey analysis | Q1.1; Q1.2 |

| N | PROPOSED METRIC | METRIC TYPE | DATA SOURCE | ANALYTICAL APPROACH | ASSOCIATED QUESTION |
|---|---|---|---|---|---|
| 16 | Number and percent of respondents who have submitted a study profile to management for inclusion in the SDP in the past three years (overall and broken out by program office/region) | Process | Survey | Survey analysis | Q2.1 |
| 17 | Counts and percent of current information sharing methods (e.g., presentations, reports, ESPIS updates, ESP-PAT etc.) for receiving information about BOEM studies | Process | Survey | Survey analysis | Q3.1 |
| 18 | Counts and percent of respondents' preferences (e.g., presentations, reports, ESPIS updates, ESP-PAT etc.) for receiving information about BOEM studies | Process | Survey | Survey analysis | Q3.1 |
| 19 | Distribution and average usefulness of information sharing methods (e.g., presentations, reports, ESPIS updates, ESP-PAT etc.) - Respondents select each option on a Likert scale | Process | Survey | Survey analysis | Q3.1 |
| 20 | Distribution and average agreement of respondents that ESP-funded studies are useful for their assessment work - Respondents select on a Likert scale | Outcome | Survey | Survey analysis | Q3.1 |
| 21 | Counts of sources of information needs (e.g., public; information need from previous assessment; information need identified for upcoming anticipated assessment; etc.) for study profiles. | Outcome | Survey | Survey analysis | Q3.2 |
| 22 | Counts and percent of current information sharing methods (discussions, conversations, etc.) for receiving information about data gaps, uncertainties, information needs in environmental assessments. | Process | Survey | Survey analysis | Q3.3 |
| 23 | Counts of types of methods that respondents use to present or otherwise disseminate study results externally | Process | Survey | Survey analysis | Q4 |
| 24 | Identification of/counts of reasons why study ideas were not implemented<br>(a) Reasons why study ideas included in the SDP were not conducted.<br>(b) Reasons why studies that were not in the SDP, were conducted. | Outcome | Survey | Survey analysis | Q2.1 |
| 25 | Identification of specific studies that are especially important for currently conducting assessment work | Outcome | Interviews | Interview Coding and Qualitative Analysis | Q1.1 |

| N | PROPOSED METRIC | METRIC TYPE | DATA SOURCE | ANALYTICAL APPROACH | ASSOCIATED QUESTION |
|---|---|---|---|---|---|
| 26 | Sources of information needs (e.g., public; information need from previous assessment; information need identified for upcoming anticipated assessment; etc.) for developing study profiles. | Outcome | Interviews | Interview Coding and Qualitative Analysis | Q3.2 |
| 27 | Types of informal environmental study data sharing methods | Process | Interviews | Interview Coding and Qualitative Analysis | Q3.1 |
| 28 | Types of formal information sharing methods for environmental studies that occur in each program/regional office (e.g., number of brownbag lunch topics on this per year) | Process | Interviews; Other Program Documents | Interview Coding and Qualitative Analysis; Supplemental Document Analysis | Q3.1 |
| 29 | Types of methods for tracking identified information needs internally (e.g., idea tracking spreadsheet by key person) | Process | Interviews; Other Program Documents | Interview Coding and Qualitative Analysis; Supplemental Document Analysis | Q3.3 |
| 30 | Identification of why study ideas were not implemented<br>(a) Reasons why study ideas included in the SDP were not conducted.<br>(b) Reasons why studies that were not in the SDP, were conducted. | Outcome | Interviews | Interview Coding and Qualitative Analysis | Q2.1 |
| 31 | Types of connections/functions of the network<br>a. Informal information exchange, e.g., emails, phone calls, and conversations<br>b. Formal collaborations, e.g., shared workgroup assignments, joint programs, boards, or groups, etc. | Process | Survey | SNA | Q3.1; Q3.3 |
| 32 | Interactions between offices/people<br>a. Development of study profiles<br>b. Conducting assessments<br>c. Study profile reviews | Process | Survey | SNA | Q3.1; Q3.3 |
| 33 | Number of connections made<br>a. By individuals<br>b. By organizations (i.e., program offices, regional offices) | Process | Survey | SNA | Q3.1; Q3.3 |
| 34 | Density of network<br>a. Proportion of possible ties in the network that are reported | Process | Survey | SNA | Q3.1; Q3.3 |

| N | PROPOSED METRIC | METRIC TYPE | DATA SOURCE | ANALYTICAL APPROACH | ASSOCIATED QUESTION |
|---|---|---|---|---|---|
| 35 | Centrality of network options include (specific metrics will be determined once data are acquired):<br>a. Degree centrality: Number of connections that each actor has with other actors in the network.<br>i. In-degree measures incoming relationships, such as receiving information;<br>ii. Out-degree measures outgoing relationships, such as sending information;<br>iii. Freeman's degree combines both in and out degree<br>b. Closeness centrality: Distance from an actor to all other actors in the network (i.e., direct and indirect connections); represents how quickly information flows from the actor to all other actors in the network<br>c. Betweenness centrality: Position between actors (i.e. if an actor is an intermediary who controls communication flows and without whom certain parts of a network would break apart) | Process | Survey | SNA | Q3.1; Q3.3 |
| 36 | Strength of ties among actors in a network<br>a. Frequency in connections made, i.e., number of communications between actors in a given timeframe (e.g., number of conversations per month)<br>b. Importance of connections made, i.e., the extent to which each contact helps further the respondent's work | Process | Survey | SNA | Q3.1; Q3.3 |
| 37 | Reciprocity among actors in a network<br>a. Number and ratio of actors that identify each other as a connection | Process | Survey | SNA | Q3.1; Q3.3 |
| 38 | Number and combination of organizational types represented in the network (e.g., program offices, regional offices) | Process | Survey | SNA | Q3.1; Q3.3 |

# V. SUMMARY OF EVALUATION APPROACH UPDATES

IEc provided a preliminary Draft Evaluation Approach Outline in January 2020 and presented the contents at an Interim Progress Meeting in Sterling, VA in February 2020. Following the meeting, BOEM provided additional feedback in written comments and discussions with IEc. Based on the feedback, IEc submitted a revised Evaluation Approach Outline in March 2020.

Since March 2020, IEc has continued to expand and refine the methodology through further research, consultations with the BOEM project team and the ESPIS team, compilation of additional assessment documents, coding of the assessment documents, and through nine evaluation scoping interviews with Studies and Assessment managers in BOEM Headquarters, the Alaska Region, Pacific Region, and Gulf of Mexico Region. In addition to reaffirming the comments received during the interim progress meeting, the scoping interviews raised the following additional considerations. Based on the scoping interviews and our ongoing research since the Interim Progress Meeting, IEc refined the evaluation methodology since the January 2020 draft version.

Feedback received and research conducted that prompted significant changes between the Evaluation Approach Outline and the current Draft Report include:

- **Expanded assessment search term list and inventory**. IEc initially identified the search terms based on research of the types of assessment documents that BOEM prepares, a review of the BOEM website, and discussions during the October 2019 orientation meeting. Feedback received as part of the Interim Progress Meeting in February 2020 allowed IEc to expand the search term list, discard certain categories of documents not considered by BOEM to be assessments for the purposes of this project, and more thoughtfully consider an approach to collecting the various types of assessments produced by the Gulf of Mexico region. Based on discussions with BOEM staff as to the completeness of the inventory, in Spring 2020, we revised our initial inventory of assessments to include additional documents.
- **BOEM input on the list of relevant topics.** IEc solicited input from BOEM on the list of topics that would be meaningful and relevant for the evaluation. Based on feedback received during the scoping interviews with BOEM experts, we revised our preliminary list of topics (described in Exhibit 13), expanding it to be more comprehensive regarding the types of resources and activities that are the subject of BOEM assessments and studies. This will allow us to provide more insight into topics for which the feedback look is working effectively.

- **Automatic coding of topics in assessments provided limited results.** Automatic coding did not capture all topics, given some differences in wording between the topics and how they are likely to be used in the assessments (the chemosynthetic communities topic is an example of this). As a result, we will use multiple search terms related to one topic, to ensure we capture differing terminology in the assessments. Automatic coding also had issues with some of the more generic terms that occur with such great frequency in the assessment documents that they led to software crashes (oil spill is a prime example). The updated approach describes that it is best to code the documents based on a combination of manual and automated processes.
- **Information needs arise in anticipation of upcoming assessments.** Scoping interviews and our initial categorization emphasized that the sources of information needs for developing studies are less likely to come from formally documented "incomplete or unavailable information" sections in environmental assessment documents and are more likely to arise in anticipation of upcoming assessments (either due to expected growth in a new activity such as wind energy development or in a new geographic area). Our review of assessment documents revealed that very few systematically identify information needs, for example within a separate subsection describing future research that would be valuable for reducing the uncertainty around an analysis. Some studies include sporadic mentions of information needs (e.g., referencing "data gaps" or suggesting "future research") but many of those mentions are not specific enough to determine whether they informed a specific ESP study. The approach included in the evaluation outline did not account for information needs to be addressed through studies in anticipation of a forthcoming assessment. To address this IEc proposes reviewing ESP-PAT and the information needs section of the study profiles to identify information needs that attribute assessments as the driving factor. Interview questions also address this topic.
- **Limited information from study profiles**. As outlined in the evaluation approach outline, IEc had planned to heavily rely on the information in the study profiles to characterize the information needs associated with each study. However, the work we have conducted in the interim suggests that this information is not consistently available across all studies. Instead, IEc will use the "information needs to be addressed" section of the profiles (where available) in conjunction with the previously identified data fields from ESPIS to provide summarized, contextual information describing the study for use in identifying topics and for the topic trend analysis, as described above.
- **Peer-reviewed publications in ESPIS are underreported**. The ESPIS database manager as well as information from scoping interviews indicated that peer-reviewed publications in ESPIS are underreported. IEc will continue to work with BOEM to develop our approach for identifying additional publications and to ensure that any additional publications we identify meet BOEM's criteria. In addition to the efforts discussed in the main body of the report, IEc will continue

to collect and consolidate the list of related environmental study publications from two known additional sources (i.e., ESP-PAT and the Alaska OCS Region List). We also plan to include a survey question for BOEM staff who develop environmental studies to list any peer-reviewed articles they authored that were published in 2015 or later; and will ask about connections between studies and assessments in the interviews.

- **BOEM staff preparing assessments prefer to cite peer-reviewed articles in lieu of BOEM reports.** Feedback received during the interim progress meeting and scoping interviews suggests that BOEM staff prefer to cite peer-reviewed articles rather than the underlying BOEM report when developing assessments. This emphasizes the need to pursue additional collection of peer-reviewed publications associated with BOEM environmental studies, because an assessment is more likely to cite the peer-reviewed article than the underlying BOEM report.
- **Need for additional informational context**. Scoping interviews indicated some concern that limiting the evaluation findings to the proposed metrics would exclude important contextual information. IEc's intent has been for the evaluation to be a complementary mixed-methods evaluation and not limited to the quantified metrics; for example, quantitative information derived from the survey will be interpreted in the context of information from in-depth interviews. To further emphasize this approach, we added interview topics to address issues that arose in the scoping interviews (e.g. study/assessment influence on NTLs, mitigation measures, etc.); how models factor into the feedback loop; and using the interviews as context to interpret and contextualize the citation results, which senior management cautioned only tell part of the story.
- **Staff often work on both assessments and studies**. In preparing the Evaluation Approach Outline, we recognized that some BOEM technical staff may work on both assessments and studies. The scoping interviews emphasized that this is typically the norm, rather than the exception. This important piece of contextual information means that all elements of feedback loop may be represented within an individual's experience at BOEM. To address this, the survey includes a question regarding the origin of study ideas and allows users to respond that it emerged from their own experience.

Other comments IEc received on the Draft Approach Outline but did not incorporate into this Evaluation Approach include a suggestion to expand the bounds of the evaluation to include non-ESP funded research. Upon discussions with the BOEM team, and in the interest of having clear definition of what falls within scope, this evaluation continues to focus specifically on ESP-funded research. Other feedback suggested looking at the administrative record for additional information on assessments; however, IEc's experience with administrative records suggest this would not necessarily contain new information from simply reviewing the assessment documents. IEc also received feedback suggesting that assessments led by other agencies, but which BOEM contributed to, should fall within scope of the evaluation. IEc will include these

assessments in Year 3 of the evaluation, which evaluates the use of ESP-funded research outside of BOEM.

# VI. EVALUATION CHALLENGES

We expect challenges will arise throughout the course of the evaluation. Early identification of challenges, an experienced team of experts that cover all subject areas relevant to the analysis, and a clear approach to resolving these challenges will allow us to efficiently and effectively move the project forward through each analytic stage and prevent challenges from becoming obstacles. We highlight the following key evaluation challenges and our approach to managing them:

- **Large volume of diverse environmental assessments in different locations.** Unlike environmental studies, which are centrally tracked in ESPIS, BOEM's environmental assessments are not compiled in a central location. One of the key scoping tasks for this evaluation is to develop, as best as possible, a comprehensive repository of assessments. As a first step, IEc developed a web scraping tool to find assessments across BOEM's webpages; however, as discussed in the Data Sources section above, many assessments are not available on BOEM's website. Therefore, IEc worked with BOEM staff to identify and fill gaps in the assessment inventory and create decision rules for inclusion or exclusion from the inventory. To supplement the assessment inventory as needed, we will use the interviews to collect qualitative information about assessment activities.
- **Diversity of environmental studies and assessment processes across BOEM**. We learned during the orientation meeting in October 2019 how environmental studies and assessments are implemented in different ways across BOEM's programs and regional offices, depending on the geographic scope, primary topics addressed, organizational structure, and size of the office or region. The challenge is to develop an evaluation process that is applicable across BOEM without glossing over important differences across offices. To help address this challenge, IEc will describe and document variations in office characteristics, based on background information received and the scoping interviews, and will use this information to contextualize and interpret evaluation findings.
- **Identifying citations of ESP-funded research and related publications in assessments.** Citation analysis is important for identifying how and to what extent ESP-funded studies have contributed to BOEM's environmental assessments. However, citation analysis has limitations. Scoping interviews indicated that assessments often cite published literature rather than the study reports. We can easily link BOEM reports or external publications back to the original study in ESPIS, if the report or publication are recorded in ESPIS; however, conversations with ESPIS database managers and the scoping interviews indicate that the related publications in ESPIS are incomplete and further research will be required to identify related

publications. IEc will utilize additional data sources to further build out the list of related publications (e.g. ESP-PAT and Alaska Publications list).

- **Measuring information that was incorporated but not directly cited.** Citation analysis depends on the authors of an assessment citing the underlying research (the BOEM report or associated external publication). However, direct citations may not occur when knowledge is transferred tacitly (e.g., through human interactions that are not formally documented) and/or when assessments reflect study topics without citing the BOEM report or publication by name. Given the overlap between studies and assessment staff in many BOEM offices, there is a high likelihood that information from studies is incorporated into assessments without a direct citation to a report or publication. To address this challenge, IEc will take a supplementary approach to the citation analysis to connect BOEM studies to related assessments using documented connections in ESP-PAT and reported connections from interviews.
- **Potential bias associated with purposive sampling for interviews.** IEc and the BOEM Evaluation Team plan to select a purposive sample of interviewees, representing different BOEM offices and roles across the organization, who are knowledgeable about the evaluation topics. However, the interviews will not be statistically representative. To mitigate this limitation, we will supplement the interviews with a survey that will be sent to the full population of BOEM technical staff who are involved in the study and/or assessment process. The survey will be the data source for deriving quantitative results.
- **Potential bias associated with survey non-response.** IEc plans to use an online survey to conduct a census of BOEM technical staff who are involved in the study and/or assessment process. However, if survey response rates are low, this could introduce bias into the survey findings (e.g., if respondents are systematically different than non-respondents). Similarly, non-response could result in SNA metrics that do not fully reflect the network as a whole. IEc will work with the BOEM Evaluation Team to maximize survey response rates by keeping survey forms brief and easy to use, by sending out multiple requests to non-respondents, and if necessary by working through non-respondents' managers to request that their staff complete the survey.

# VII. REPORTING RESULTS

IEc proposes an incremental approach to reporting results to BOEM. This approach is aimed at engaging the BOEM Evaluation Team and other key BOEM personnel who may be involved in implementing recommendations based on the evaluation findings.

As specified in the Statement of Work, IEc will engage with BOEM throughout the evaluation process. This includes a planning meeting prior to launching the evaluation (Year 2 of the project); a Draft Report and Draft Technical Summary; a Final Report and Final Technical Summary; and an oral presentation of the Final Report.

In addition, IEc proposes an interim webinar briefing to present and discuss our preliminary evaluation findings. This interim briefing would occur after IEc has collected the evaluation data and conducted our initial analysis, and before we submit the Draft Report. IEc has found that providing an opportunity for interim feedback and discussion of the evaluation findings prior to submitting the draft report is an effective way to clarify issues of fact and interpretation, discuss the implications and potential recommendations stemming from the evaluation findings, and to increase the likelihood that evaluation results will be used. Following the interim briefing, IEc will draft the report. After receiving BOEM's comments on the Draft Report, we will deliver the Final Report and presentation.

IEc will strive to keep the report concise, with a brief executive summary that summarizes the evaluation purpose, findings, and recommendations. To protect confidentiality, IEc will present interview and survey results in an aggregated fashion. Illustrative quotations may be provided, but quotations will not be attributed to individuals, and no other identifying information will be included.

## APPENDIX A: INTERVIEW GUIDES

The table below presents the interview guide questions by topic and the applicability of the question to different roles: environmental studies manager, environmental assessments manager, and environmental studies and assessments staff. Once wording of the questions is finalized separate guides will be built out in narrative format.

| N | TOPIC | QUESTION | ES MGR | EA MGR | ES AND EA STAFF^ |
|---|---|---|---|---|---|
| 1 | Background | Briefly, describe your current role at BOEM and how long you have been in your current position. | x | x | x |
| 2 | Background | How long have you been with BOEM? What previous roles have you held at BOEM? | x | x | x |
| 3 | Background | Do you conduct studies? Assessments? Both? | | | x |
| 4 | Background | Do you oversee staff who conduct studies? Assessments? Both? | x | x | |
| 5 | Background/ Models | Do you play a role in developing BOEM models? If yes, which models? What role do you play? | | | x |
| 5a | Background/ Models | How (if at all) do BOEM studies inform your model inputs, assumptions, etc.? | | | x |
| 6 | Background/ Models | Do you use models or modeling data to develop assessments? If yes, which models or modeling data do you use? How do you use it? | | | x |
| 7 | Office | What types of interactions (if any) do you/your office have with other BOEM offices on studies and/or assessments? | x | x | x |
| 8 | Assessments | Are there specific studies that have been, or currently are, of particular importance to your assessment work? If yes, explain. | | x | x |
| 9* | Assessments | Our assessment inventory does not include post-lease EAs because these often do not contain new information or analysis; but we understand that sometimes they might. Are you aware of specific post-lease EAs that provided new information and/or new analysis? *If yes:* | | x | x |
| 9a* | Assessments | What was the process for developing these post-lease EAs to include new information and analysis? | | x | x |
| 9b* | Assessments | Did these post-lease EAs use information from BOEM studies? | | x | x |
| 9c* | Assessments | Did these post-lease EAs raise issues for future environmental studies? | | x | x |

| N | TOPIC | QUESTION | ES MGR | EA MGR | ES AND EA STAFF^ |
|---|---|---|---|---|---|
| 10a * | Assessments | Our assessment inventory does not currently include RODs because these often do not contain new analysis or information. However, we understand that sometimes RODs reference MfRs that are developed to provide new/additional information after the EIS is completed. Are you aware of specific MfRs that provided new information and/or new analysis to inform the ROD? *If yes:* | | x | x |
| 10 b* | Assessments | What was the process for developing these MfRs to include new information and analysis? | | x | x |
| 10c * | Assessments | Did these MfRs use information from BOEM studies? | | x | x |
| 10 d* | Assessments | Did these MfRs raise issues for future environmental studies? | | x | x |
| 11 | Assessments | Are there any major assessment activities or assessments missing from our assessment inventory? | | x | x |
| 12 | Studies | How do you identify information needs for developing study profiles? | x | | x |
| 13 | Studies | How do you track identified information needs internally? | x | | x |
| 14 | Studies | Have you submitted a study profile(s) within the past three years? | | | x |
| 14a | Studies | If yes, what was the result? If your study idea wasn't implemented, why not? | | | x |
| 15 | Studies | Why are study ideas not implemented? Specifically: | x | | |
| 15a | Studies | Reasons why study ideas included in the SDP were not conducted. | | | |
| 15 b | Studies | Reasons why studies that were not in the SDP, were conducted. | | | |
| 16 | Studies | When (if at all) are studies implemented that were not in the SDP? How common is this? Why does it occur? | x | | x |
| 17 | Coding | We conducted a trend analysis of study and assessment topics overall and for each office. Focusing on your office, what do you think explains these trends? *(show trend analysis)* | x | x | |
| 17a | Coding | Why did these particular topics come up when they did? What information needs or other factors drove the focus on these topics? | x | x | |
| 18 | Coding | Our citation analysis findings for your office show [customize to each office… could include: an assessment that cited a lot of studies; a particular study that was cited in multiple assessments; etc.] Can you tell us more about the context for these citations? For what purpose were these studies used in the assessments where they were cited? | x | x | |

| N | TOPIC | QUESTION | ES MGR | EA MGR | ES AND EA STAFF^ |
|---|---|---|---|---|---|
| 18a | Coding | How did the study information complement or augment other data sources used in the assessments? | x | x | |
| 19 | Loop | Can you think of examples of persistent information needs in assessments that have not been addressed in studies? If yes, explain. | | x | x |
| 20 | Loop | Can you describe any specific examples where studies were developed to address information needs for<br>Past assessments?<br>Future anticipated assessments? | x | x | x |
| 20a | Loop | If yes for past assessments, did the studies successfully address the information needs identified? Why or why not? | x | x | x |
| 21 | Loop | Do BOEM analysts who work on assessments use ESPIS as a resource for obtaining environmental information? | | x | |
| 22 | Loop | When working on assessments, do you use ESPIS as a resource for obtaining environmental information? Why or why not? | | | x |
| 23 | Loop | How are information needs identified during the assessment development process (planning, conducting, or reviewing assessments)? If these information needs are not resolved during the assessment development process, where are they documented? Who documents them? | | x | x |
| 24 | Loop | If an information need is identified, how is it communicated (informally or formally) within BOEM? Who communicates the information need? | x | x | x |
| 25 | Loop | In general, are information needs identified through the assessment development process (planning, conducting, or reviewing assessments) developed into studies? | x | x | x |
| 26 | Loop | Overall, do you think the results of the studies address the information needs that are identified in the study profiles? | x | x | x |
| 26a | Loop | If no, why not? | x | x | x |
| 27 | Loop | How are study results (interim and final) communicated, informally or formally, within BOEM? (probe: are the results published in ESPIS? ESP-PAT tool?) | x | x | x |
| 28 | Loop | Are the individuals who first identified the need notified when a relevant study is completed? | x | x | |
| 29 | Loop | Are you informed when an information need that you identified is addressed through a study? | | | x |
| 30 | Loop | Based on your observations and experiences, can you identify any best practices for sharing study and assessment results within BOEM? If yes, explain. | x | x | x |

| N | TOPIC | QUESTION | ES MGR | EA MGR | ES AND EA STAFF^ |
|---|---|---|---|---|---|
| 31 | Loop | Are any changes needed to the feedback loop process? | x | x | x |
| 31a | Loop | If yes, what would they be? Who would be responsible for implementing the changes? | x | x | x |
| 32 | Policy | To what extent do study results inform: (i) mitigation measures; (ii) models; (iii) follow-on studies? | x | x | |
| 32a | Policy | Can you think of one or two specific examples where this has happened? | x | x | |
| 32 b | Policy | Briefly describe your example(s). How were the study results communicated? Once communicated, how did the results influence the content of the mitigation measures, NEPA reviews, etc.? | x | x | |
| 32c | Policy | Other than the example(s) above, are you aware of particularly influential studies that informed key assessments and/or led to major policy decisions at BOEM? | x | x | |
| 33 | Policy | Can you refer us to specific NTL documents that were informed by assessments, which were in turn informed by studies? How were these NTLs informed by the assessments and studies? If yes, please explain. | x | x | |
| 34 | Policy | What are 3-5 of the most consequential policy decisions that your office has been involved with in the past 10-20 years? To what extent, if at all, did studies and assessments help to inform these policy decisions? What other factors drove these decisions? | x | x | |
| 35 | Policy | How (else) are study results (interim or final) used within BOEM? | x | x | x |
| 36 | Background/ Comm. | Other than what we have already discussed, do you play a primary role in communicating study or assessment results within your office and/or to other BOEM offices? If yes, what role do you play? How and to whom do you communicate? | | | x |

^The exact questions IEc will ask ES and EA staff will be based on the interviewee's response to background Question 3 to ensure that IEc is asking relevant questions in each interview.

*Question applicable only to GOM and HQ assessment manager.

# APPENDIX B: SURVEY QUESTIONNAIRES

## PART 1 – GENERAL SURVEY

### Introduction

BOEM is conducting an evaluation of the "Feedback Loop" – how BOEM studies inform assessments, how assessments inform studies, and how information is shared across BOEM and with external stakeholders. This survey is an important part of the Feedback Loop study.

You received this survey because you work on environmental studies and/or assessments or manage staff who do. The information that you provide through this survey will help to inform the study findings about the effectiveness of the Feedback Loop, and might also help inform recommendations to strengthen the Feedback Loop moving forward.

This survey includes two parts. Part 1 asks for information about the study and assessment process and results, drawing on your own experience and opinions. Part 2 is aimed at collecting information on your connections to other individuals inside and outside of BOEM with whom you share information relating to studies and assessments. The results of Part 2 aim to show how information flows throughout BOEM and to/from external stakeholders.

The survey should take about 25 minutes to complete. The survey will remain open for approximately one week.

We encourage you to be completely candid in your responses. There are no "right" or "wrong" answers to the survey questions, and your candor will help ensure that your responses are accurate and helpful.

Please be assured that your responses in Part 1 will be kept strictly confidential. BOEM has contracted with an independent consulting firm to administer the survey. The consultants will not attribute any responses to individuals. The information in Part 2 is designed to map connections between individuals and will require your name and the names of your contacts. However, none of the information that you provide in Part 1 will be linked to your responses in Part 2.

If you have any questions about the study, please feel free to contact *[BOEM point of contact for the survey]*.

Thank you.

**Background**

1. Which of the following offices are you affiliated with?
    - ☐ Headquarters – Office of Environmental Programs (OEP)
    - ☐ Office of Renewable Energy Programs (OREP)
    - ☐ Marine Minerals Program (MMP)
    - ☐ Gulf of Mexico Region, New Orleans Regional Office
    - ☐ Pacific Regional Office
    - ☐ Alaska Regional Office
2. Do you serve in a supervisory role or as staff?
    - ☐ Supervisory role
    - ☐ Staff

**Studies**

The scope of "environmental studies" for this project includes research that is funded by the BOEM Environmental Studies Program (ESP) and contained in the Environmental Studies Program Information System (ESPIS). It does not include research funded solely through other BOEM funding mechanisms.

3. Do you work on BOEM environmental studies or manage staff who do? This includes conducting studies, managing studies, developing study profiles, contributing to the Study Development Plan (SDP) or National Studies List (NSL), or serving on a Science and Technical Review (STR) team.
    - ☐ Yes → *Go to the next question.*
    - ☐ No → *Skip to the next section.*
4. Do you develop inputs for BOEM models (e.g., input data, datasets, assumptions)?
    - ☐ Yes
    - ☐ No
5. Considering the studies you currently work on, where did the idea(s) for the study(ies) originate? Select all that apply.
    - ☐ Public comment
    - ☐ Input from other federal agencies
    - ☐ Input from other (non-federal) external public agencies
    - ☐ An information need that was identified in a previous assessment that you conducted
    - ☐ An information need that was identified in a previous assessment conducted by someone else

- ☐ An information need that you anticipated for a future assessment
- ☐ An information need that someone else anticipated for a future assessment
- ☐ A previous study
- ☐ Your own research/scientific work
- ☐ Other (please specify)

6. How is information about study ideas shared?
   - ☐ Through internal BOEM meetings
   - ☐ Through external stakeholder forums
   - ☐ Through informal conversations with BOEM study colleagues
   - ☐ Through informal conversations with BOEM assessment colleagues
   - ☐ Through conversations with colleagues in other organizations
   - ☐ Through conferences or presentations
   - ☐ Other (please specify)
7. Within the **past three years**, have you submitted one or more Study Profiles to management for inclusion in the Study Development Plan (SDP)?
   - ☐ Yes → *Go to next question.*
   - ☐ No → *Skip the questions about Study Profiles.*
8. How many unique Study Profiles have you submitted within the **past three years** (count any resubmitted profile as a single submission)? *[Drop-down number box]*
9. *[Based on response to previous question, the survey will populate the table for this question with the appropriate number of rows.]* What is the current status of the study profiles you submitted in the past three years? Use the table below to briefly describe the study idea, the SDP status, implementation status and reasons why the study has not been advanced (if applicable).

| Study idea | Accepted into the SDP? | Initiated, in progress, or completed? | If No, In your opinion, why hasn't your study idea been implemented? |
|---|---|---|---|
| | *[Drop-down menu: Yes, No, or Pending]* | *[Drop-down menu: Yes, No, or Pending]* | *[Write in]* |
| | | | |

10. Have one or more studies that you contributed to resulted in peer-reviewed journal articles that were **published since 2015?** For this question, please consider the date when the peer-reviewed article(s) were published – not the date when you completed the study.
    - ☐ Yes → *Go to next question.*

☐ No → *Skip to the following questions.*

11. Please list the name(s) of the peer-reviewed journal article(s), the year(s) of publication, the journal title(s), and the name of the original study(ies).

| Name of Journal Article | Year Journal Article was Published | Journal Title | Name of the BOEM Study the Article was Based On |
|---|---|---|---|
| | | | |
| | | | |

12. How do you disseminate information about study findings within BOEM? Select all that apply.
    - ☐ Presentations
    - ☐ Study reports
    - ☐ Peer-reviewed articles
    - ☐ ESPIS
    - ☐ ESP-PAT
    - ☐ Word of mouth
    - ☐ Other (please specify)
13. How do you disseminate information about study findings external to BOEM? Select all that apply.
    - ☐ Presentations
    - ☐ Study reports
    - ☐ Peer-reviewed articles
    - ☐ ESPIS
    - ☐ ESP-PAT
    - ☐ Word of mouth
    - ☐ Other (please specify)

**Assessments**

The scope of "environmental assessments" for this project encompasses the full suite of analyses that BOEM's Environmental Assessment program undertakes related to compliance with environmental statutes, regulations, and executive orders; it is not limited to National Environmental Policy Act (NEPA) analyses. Specifically, the following types of assessments are relevant:

- NEPA Environmental Impact Statements.
- NEPA Environmental Assessments.
- NEPA Findings of No Significant Impacts.
- NHPA Documents (includes Section 106 evaluations of effects on historic properties).
- Essential Fish Habitat Assessments for Magnuson-Stevens Act consultations.
- ESA Section 7 Biological Evaluations.
- ESA Section 7 Biological Assessments.
- Analyses and assessments prepared for CAA, CZMA, MMPA, and EO 13795.
- Analyses and assessments such as engineering analyses, regulatory impact analyses, resource evaluations, site assessments, and cost-benefit analyses, prepared for OCSLA and other regulatory requirements.

14. Do you work on BOEM environmental assessments or manage staff who do? This includes conducting information gathering or analysis for assessments, writing assessments, or managing assessments.

    ☐ Yes → *[Go to next question.]*

    ☐ No → *[Skip to following section.]*

15. Do you use BOEM models to develop analyses for environmental assessments?

    ☐ Yes → *[Go to next question.]*

    ☐ No → *[Skip to the question after the next.]*

16. Please list the BOEM models that you use to develop analyses for environmental assessments. *[open text box]*

17. Which of the following have you relied on **in the past year** to develop analyses for environmental assessments? For each item that you have used in the past year, please indicate its **importance for developing** analyses for environmental **assessments**. Please answer on as a scale of 1 – not at all important to 5 – extremely important.

| **Knowledge Product** | **N/A** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|---|
| BOEM studies that you authored or coauthored | | | | | | |

| Knowledge Product | N/A | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| BOEM studies authored by other people | | | | | | |
| BOEM models | | | | | | |
| External peer-reviewed journal articles | | | | | | |
| Information from other Federal agencies (including grey literature) | | | | | | |
| Information from state agencies | | | | | | |
| Other (please specify) | | | | | | |

18. To what extent do you agree with the following statement: "ESP-funded studies are useful for my assessment work." Please answer on a scale from 1 (strongly disagree) to 5 (strongly agree).

**Use of Study Findings (Studies and Assessments)**

19. In the **past year**, how have you received information about BOEM study findings? For each item that you have used in the past year, please indicate its **usefulness** as a method for receiving information about studies. Please answer on as a scale of 1 – not at all important to 5 – extremely important.

| Knowledge Product | N/A | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Presentations | | | | | | |
| Study reports | | | | | | |
| Peer-reviewed articles with study findings | | | | | | |
| ESPIS | | | | | | |
| ESP-PAT | | | | | | |
| Word of mouth | | | | | | |
| Other (please specify) | | | | | | |

20. Which of the following ways do you (or would you) **prefer** to receive information about BOEM study findings? Check all that apply.

☐ Presentations

☐ Study reports

☐ Peer-reviewed articles with study findings

☐ ESPIS

☐ ESP-PAT

☐ Word of mouth

☐ Other (please specify)

21. To what extent do you think that study results or BOEM reports or associated external publications inform each of the following? Please check one column for each row. Please answer on as a scale of 1 – not at all to 5 – a very large extent.

| **Potentially Informed Items** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Environmental Impact Statements | | | | | |
| Environmental Assessments | | | | | |
| Mitigation measures | | | | | |
| Consultations | | | | | |
| Notices to Lessees and Operators | | | | | |
| Models | | | | | |
| Follow-on studies | | | | | |

22. If you could change one thing to strengthen the "feedback loop" between studies and assessments, what would it be, and why? *[open text box]*
23. Is there anything else that you would like to tell us? *[open text box]*

### PART 2 – SNA SURVEY

**Introduction**

This section of the survey will collect information to analyze connections across BOEM. Your answers will help us understand how studies and assessment information flows throughout your office and throughout the Bureau. We will be asking you to identify individuals within BOEM with whom you communicate on studies and assessments and to provide information about those connections. We will also be asking you for external contacts, who we may survey in a future effort. We will use the survey results to develop sociograms (network maps) and metrics that explain the structure of BOEM's "network" and how information flows throughout the network.

Please note that the independent contractors who are conducting this study will analyze this section of the survey separately from the previous section. Although the current section is collecting information about you and your contacts, this information will not be linked with the answers that you provided in the previous section.

**Information About You**

*[The survey will pre-load information about the respondent and display it on the screen.]*

1. Please confirm your name. If you need to make changes, please do so here:
2. Please confirm your organization. If you need to make changes, please do so here:

**Internal Contacts**

3. Do you interact with anyone in the following offices/groups? Please select ALL that apply.

   *[List all the offices/groups represented in our survey list]*

4. Please select ALL the individuals you interacted with at least once **within the last 12 months** in the development or implementation of studies, the development of assessments, or the dissemination of information about studies or assessments.

   *[Based on the answer to the previous question and subject to technical capabilities of the survey software, the survey will pre-load the names associated with each selected group. If respondent selected more than one group, each list would be shown separately.]*

5. *[The survey will show a consolidated list with only the names that the respondent selected.]* We recognize that you might have other important connections that were not listed above. Therefore, please write-in the names and office of additional *important* connections with whom you interacted on *studies and/or assessments* **within the last 12 months**.

6. *[The survey will show the list of names reported in questions 4 and 5.]* For each individual, please indicate how **often** you interact and how **important** those interactions are to you. Please use the drop-down menus in each column to express your answer on a scale from 1 to 5 (where 1 is less and 5 is more).

| Name | Frequency of Interactions | Importance of Interactions |
|---|---|---|
| *[Pre-filled]* | *[Drop-down:*<br>*1) At least once a year, but less than once a month*<br>*2) Once or twice a month*<br>*3) More than twice a month, but less than weekly*<br>*4) At least once a week]* | *[Drop-down:*<br>*1) Not important*<br>*2) Slightly important*<br>*3) Moderately important*<br>*4) Important*<br>*5) Very important]* |
| | | |

7. Complete the table for each individual, report the **subject of interactions** and **type of interactions** you have with each individual.

   Fill out the blue boxes as though completing the sentence, “I interact with this person to. . .”

   Fill out the yellow boxes as though completing the sentence, “I interact with this person through. . .” Check the relevant column(s).

| Name | …develop study ideas | …review study profiles | …conduct studies | …contribute to assessments | …send them information about study results or assessments | …formal interactions, e.g., shared workgroup assignments, joint programs, boards, or groups, etc. | …informal interactions, e.g., emails, phone calls, and conversations |
|---|---|---|---|---|---|---|---|
| *[Pre-filled]* | *[Yes/No]* | *[Yes/No]* | *[Yes/No]* | *[Yes/No]* | *[Yes/No]* | *[Yes/No]* | *[Yes/No]* |
| | | | | | | | |

**External Contacts**

8. In the table below please indicate the **five** most important **external organizations** that you interacted with in the development or implementation of studies, the development of analyses for environmental assessments, or the dissemination of information about studies or assessments **within the last 12 months**. Please consider contacts at other federal agencies, state agencies, academics/universities, Tribes, regional organizations, and other external partners.

| Organization | Type of organization |
|---|---|
| | *[Drop-down:*<br>*1. Federal agency*<br>*2. State agency*<br>*3. Local agency*<br>*4. Regional agency*<br>*5. Tribal Government*<br>*6. Academia/University*<br>*7. Consultancy*<br>*8. Other]* |
| | |

9. In the table below please provide at least one **individual contact** from each organization listed above. We plan to survey these individuals in the next phase of this study to understand BOEM's studies and assessments "network." Please indicate in the last column if you have any concerns with us contacting the individual.

| Organization | First Name | Last Name | Email Address (Optional) | Do you have concerns about IEc contacting this individual? (If yes, check box and describe) |
|---|---|---|---|---|
| *[Pre-populated drop-down list based on responses to* | | | | |

| | | | | |
|---|---|---|---|---|
| *previous question]* | | | | |
| | | | | |

10. *[The survey will show a list with the names the respondent entered in the previous question.]* For each individual that you listed, please indicate *how often* you interact and *how important* those interactions are to you. Please use the drop-down menus in each column to express your answer on a scale from 1 to 5 (where 1 is less and 5 is more).

| Name | Frequency of Interactions | Importance of Interactions |
|---|---|---|
| *[Pre-filled]* | *[Drop-down:*<br>*1) Less than once a year*<br>*2) At least once a year, but less than once a month*<br>*3) Once or twice a month*<br>*4) More than twice a month, but less than weekly*<br>*5) At least once a week]* | *[Drop-down:*<br>*1) Not important*<br>*2) Slightly important*<br>*3) Moderately important*<br>*4) Important*<br>*5) Very important]* |
| | | |

11. Now please identify the *type of interactions* you have with each individual that you selected. Check the relevant column(s).

    Fill out the blue boxes as though completing the sentence, "I interact with this person to. . ." Check the relevant column(s).

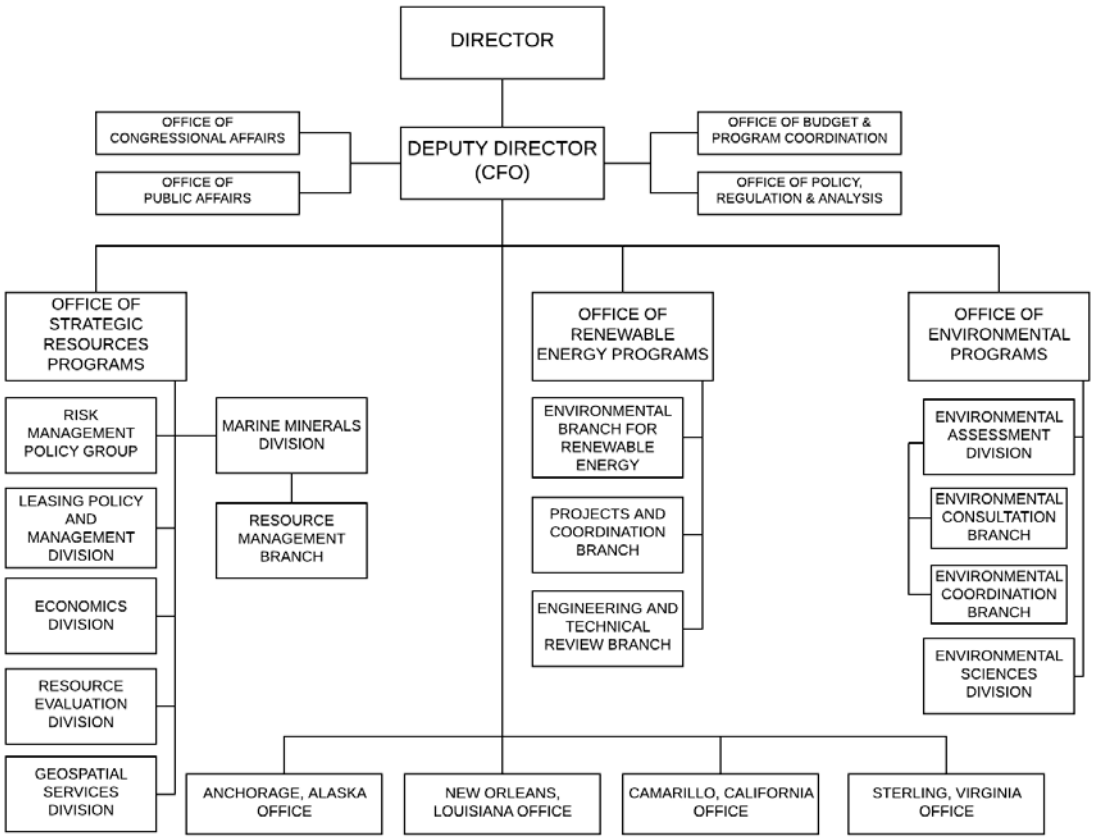
    Fill out the yellow boxes as though completing the sentence, "I interact with this person through. . ." Check the relevant column(s).

| Name | …develop study ideas | …review study profiles | …conduct studies | …contribute to assessments | …send them information about study results or assessments | …formal interactions, e.g., shared workgroup assignments, joint programs, boards, or groups, etc. | …informal interactions, e.g., emails, phone calls, and conversations |
|---|---|---|---|---|---|---|---|
| *[Pre-filled]* | *[Yes/No]* | *[Yes/No]* | *[Yes/No]* | *[Yes/No]* | *[Yes/No]* | *[Yes/No]* | *[Yes/No]* |
| | | | | | | | |

# APPENDIX C: SUMMARY OF BOEM OFFICES[29]

## HEADQUARTERS – OFFICE OF ENVIRONMENTAL PROGRAMS (OEP)

### OFFICE PROFILE




#### Geographic Scope

National and cross-region.

#### Office Size

The Division of Environmental Assessment (DEA) currently has 19 staff including the branch manager position, while the Division of Environmental Sciences (DES) currently has 21 staff including the branch manager position.

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[29] The organizational charts in Appendix C are not the official BOEM organizational charts and are only intended to be used for purposes of the Evaluating Connections project.

### Office Structure

DEA and DES are both under OEP.

### Connections to other offices or organizations

Other agencies such as the National Marine Fisheries Service (NMFS) use research funded by BOEM for management decisions. In turn, BOEM may use these management decisions to inform, for example, exclusions at the National level. BOEM works closely with other agencies to collaborate on environmental reviews.

### Primary Activity(ies) and Priority Issues

- Conduct environmental reviews to strengthen BOEM decisions.
- Develop national-level guidance and best practices for rigorous environmental analyses.
- Conduct multi-region and national-level environmental reviews, policies, guidance, and best practices.
- OEP management ultimately prioritizes national needs.

Additional priority areas of focus for DEA include (focusing on select centralized functional expertise):

- Acoustics
- Air quality/Climate change
- Streamlining environmental policies and review processes
- Creative, innovative content and improved methodologies for environmental and consultation documents (e.g., cumulative effects, visual content).

### Emerging issues

OEP developed long-term goals in July 2019. These goals include:

- Championing BOEM's environmental program to be recognized as "first in class" among peer federal agencies.
- Implement a single National Program document that incorporates all environmental analysis in the five-year program.
- Advance BOEM's effectiveness and recognition in consultation and collaboration with federally recognized tribes and Alaska Native Claims Settlement Act Corporations.
- Establish or strengthen "centers of expertise" that apply highly specialized knowledge and skills in key technical areas to serve and benefit all BOEM programs and regions.
- Advance emerging technologies to answer key scientific questions concerning BOEM's activities.
- Modernize environmental science and analysis communication.

### Relationship between individuals implementing environmental assessments and those developing environmental studies

Historically, there was no formal coordination between DEA and DES for developing study profiles. However, roughly one-third to one-half of DEA staff generate study ideas and serve as COTRs for studies. While this type of coordination has been happening in an ad hoc manner, OEP is aiming for more formal coordination between DEA and DES in developing and prioritizing national studies.

### General number of studies conducted/year

According to data obtained from ESPIS, BOEM Headquarters typically initiates between one and five new studies per year, although this varies by year.

### Regulatory Requirements[30]

- NEPA.
- Air Quality Act (1967) or the Clean Air Act (CAA).
- Coastal Zone Management Act (CZMA).
- Endangered Species Act (ESA).
- Federal Water Pollution Control Act (1972) or the Clean Water Act (CWA).
- Magnuson-Stevens Fishery Conservation and Management Act (FCMA).
- Marine Mammal Protection Act (MMPA).
- Migratory Bird Treaty Act (MBTA).
- National Historic Preservation Act (NHPA).
- Executive Order 12114: Environmental Effects Abroad.
- Executive Order 12898: Environmental Justice.
- Executive Order 13007: Indian Sacred Sites.
- EO 13175 of Nov. 6, 2000. Consultation and Coordination with Indian Tribal Governments. 65 Fed. Reg. 67249 (Nov. 9, 2000).
- DOI Policies on Consultation with Indian Tribes (Dec. 1, 2011), and Consultation with Alaska Native Claims Settlement Act (ANCSA) Corporations (Aug. 10, 2012).
- Executive Order 13089: Coral Reef Protection.

BOEM follows guidance outlined in 43 C.F.R. Part 46 for implementing NEPA, and also has a requirement for streamlining NEPA and ESA/MMPA processes, including page limits and time constraints (see the Department of the Interior's Secretarial Order 3355). For example, the Department of Interior's regulations state that preparers should use techniques that incorporate reference documents and use tiering to remain within page limits set by the Council on Environmental Quality (CEQ) in 40 C.F.R. 1502.7 (43 C.F.R. 46.405). BOEM anticipates new implementing procedures may be required to further streamline environmental compliance documents, given CEQ's recent release in January 2020 of proposed updates to NEPA regulations for public comment.

### Primary Type of Assessment(s)

OEP prepares NEPA documents and Outer Continental Shelf Lands Act (OCSLA) reports; provides oversight, policy guidance, and direction for NEPA and other environmental laws and regulations affecting OCS activities; and participates in international conventions and treaty activities. The OCSLA requires examinations of environmental sensitivity and marine productivity in potential lease areas for the National OCS Program.

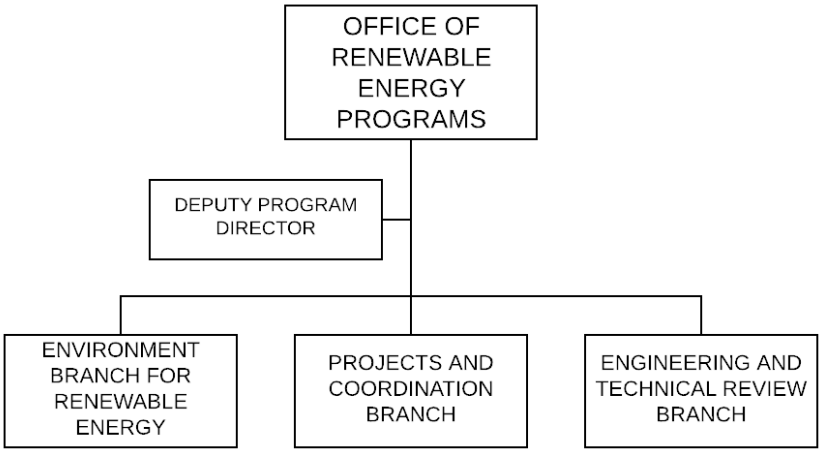
[30] https://www.boem.gov/environment/environmental-assessment/environmental-assessment

### ENVIRONMENTAL STUDY PROFILE DEVELOPMENT PROCESS

Staff identify information needs and some staff track potential study ideas over time. OEP has relied on the annual Study Development Process to express what information needs should be addressed through a study. When staff submit a Study Profile, they are now required to identify the information need that the study would address. Additionally, there are some instances where DES management develop a study profile without a clear direct link to national or DEA information needs. Some studies are undertaken based on BOEM requirements to monitor conditions or impacts of activities, and others are developed in anticipation of future assessment needs. A study profile is developed by first identifying an information need, developing the idea and soliciting input/partnership, and subsequently writing the study profile.

## OFFICE OF RENEWABLE ENERGY PROGRAMS (OREP)

### OFFICE PROFILE




#### Geographic Scope

National, with focus in the Atlantic.

#### Office Size

There are approximately 50 people employed at OREP. The largest branch is the Environment Branch with 18 staff, and the smallest is the Engineering & Technical Review Branch.

#### Office Structure

There are three branches of OREP, including the Environment Branch, the Projects & Coordination Branch, and the Engineering & Technical Review Branch. There is no one office that performs all of the studies; however, the Environment Branch conducts most studies and the Engineering & Technical Review Branch also conducts some studies.

#### Connections to other offices or organizations

Although OREP is located in Headquarters, the vast majority of program activities are focused in the Atlantic.

#### Primary Activity(ies) and Priority Issues

- Planning and analysis.
  - Intergovernmental task force.
  - Request for information or call for information and nominations.
  - Area identification.
  - Environmental reviews.
- Leasing.
  - Publish leasing notices.
  - Conduct auction or negotiate lease terms.
  - Issue lease(s).
- Site assessment.
  - Site characterization.

    - Site assessment plan.
- Construction and operations.
    - Construction and operations plan.
    - Facility design report and fabrication and installation report.
    - Decommissioning.
    - Environmental and technical reviews.
- Commercial fishing.
- Protected species.

#### Emerging issues

Compared to other BOEM offices, OREP is relatively new with clearly identified information needs focused on offshore renewables. These information needs are so severe they tend to be "program-stopping."

Additionally, OREP has identified instances when research on a subject is exhaustive and is no longer an information need. OREP struggles to effectively communicate "retiring risk" and demonstrate that a previous information need is now understood.

#### Relationship between individuals implementing environmental assessments and those developing environmental studies

Many of OREP's scientists within the environmental and engineering and technical review branches write studies. Environmental protection specialists tend to do fewer studies compared to other positions.

#### General number of studies conducted/year

Eleven studies were conducted in 2018.

#### Regulatory Requirements

- NEPA.
- Renewable Energy Program Regulations (30 CFR 585).[31]
- OSHA regulations.
- Energy Policy Act of 2005.
- Outer Continental Shelf Lands Act.
- Federal Power Act.
- NHPA

#### Primary Type of Assessment(s)

- Environmental Assessment for Lease Issuance and Site Assessment Activities.[32]
- Conducts environmental and technical reviews of potential lessees' Site Assessment Plans (SAPs).

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[31] https://www.boem.gov/sites/default/files/uploadedFiles/30_CFR_585.pdf.

[32] https://www.boem.gov/sites/default/files/boem-newsroom/Wind-Energy-Comm-Leasing-Process-FS-01242017-%281%29.pdf.

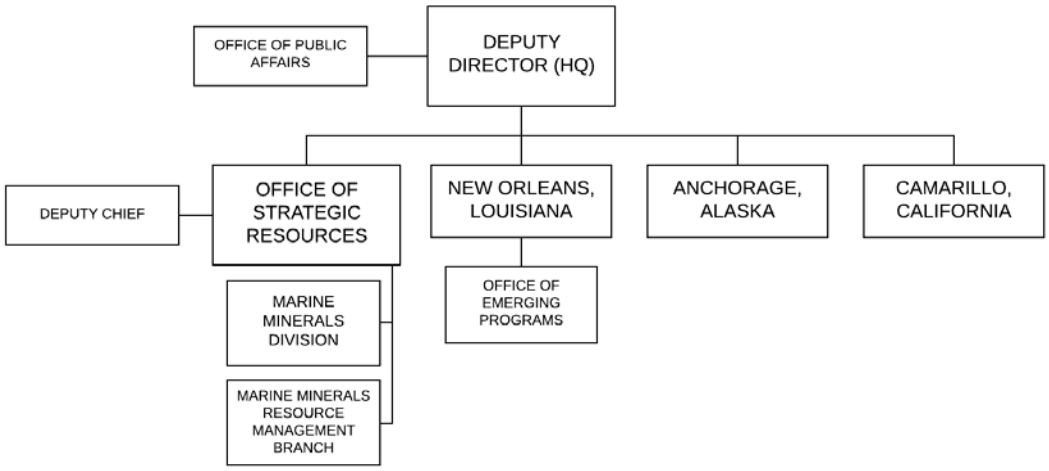
### ENVIRONMENTAL STUDY PROFILE DEVELOPMENT PROCESS

OREP releases an annual notice to stakeholders soliciting research ideas and information needs. Approximately 50 percent of stakeholder-submitted ideas become studies. Mary Boatman in OREP keeps track of study ideas over time.

### ENVIRONMENTAL ASSESSMENTS USE OF STUDIES

OREP staff often rely on the resources consolidated on BOEM Renewable Energy Research website to conduct assessments. The website is kept up to date with all completed, ongoing, and planned studies within the office. The studies clearly contribute to assessments. Assessments are frequently developed by third-party contractors. Pre-application meetings are held regarding the use of studies.

## MARINE MINERALS PROGRAM (MMP)




## OFFICE PROFILE

### Geographic Scope

National.

### Office Size

The Marine Minerals Division, the largest section of the MMP, employs approximately 10 people. Other MMP employees are employed within OPA and regional offices, including the Office of Emerging Programs in the GoM (these staff will be counted within GOM numbers). Across all aspects of MMP, approximately 5-6 staff contribute to assessments and/or studies, although MMP regularly leverages approximately 15-20 other staff in programs across the agency.

### Office Structure

MMP is spread across several offices within BOEM, but the majority of the program is under the Marine Minerals Division under the Office of Strategic Resources Programs.

### Connections to other offices or organizations

MMP includes a small number of full-time staff in GOMR, and some part-time staff in the Pacific and Alaska regions. MMP coordinates closely with the U.S. Army Corps of Engineers (USACE) on assessments for dredging-related activities.

### Primary Activity(ies) and Priority Issues

- Leasing, including environmental assessments. EAs are conducted more frequently than EISs.
- Inventory.
- Studies.
- Sand identification.
- Biological measures.
- Dredge optimization (e.g., to minimize impacts).

### Emerging issues

Potential upcoming studies to meet information needs include utilization of fish distribution on sand shoals, effects of hopper dredges on sea turtles, and trace eDNA and metabarcoding to understand changes in biodiversity and benthic species distribution across seasons and dredging events.[33]

### Relationship between individuals implementing environmental assessments and those developing environmental studies

Studies are informed by implementing MMP assessments or cooperating on USACE assessments. MMP staff contribute to and review study profiles. They solicit input and feedback from stakeholders. Persons outside MMP can champion a project with an MMP partner. MMP leverages other programs such as OREP to determine what research would be beneficial to both programs. The studies coordinator is the chief of the Marine Minerals Division.

### General number of studies conducted/year

Across headquarters and GOMR, MMP conducts roughly between four and seven studies per year. Unknown.

### Regulatory Requirements

- NEPA.
- ESA.
- Historic Preservation.
- Coastal Zone.
- Essential Fish Habitat.
- State permits.

### Primary Type of Assessment(s)

MMP largely conducts impact assessments as a function of their leasing activities. MMP is rarely the lead office for an assessment; they are usually a cooperating agency on NEPA documents and consultations but may be the lead agency in their jurisdiction. Compliance consultations are led by three individuals in MMP, who work with specific experts for additional support, and are heavily reliant on partners. Most frequently, MMP produces EAs and FONSIs, but occasionally will conduct EISs and RODs for big projects.

## ENVIRONMENTAL STUDY PROFILE DEVELOPMENT PROCESS

Study ideas are supplied by both environmental scientists and geologists. The study ideas are often based on project experiences or consultations. MMP also has staff in RE, which can collect environmental baseline data. The whole MMP program across all regions, reviews and vets the initial study list and ranks them. Studies focus on biological impacts and dredge operations to minimize impacts. Results are shared through ESPIS and the MMP website; conferences; and sand management working groups. There is otherwise no formal sharing within BOEM.

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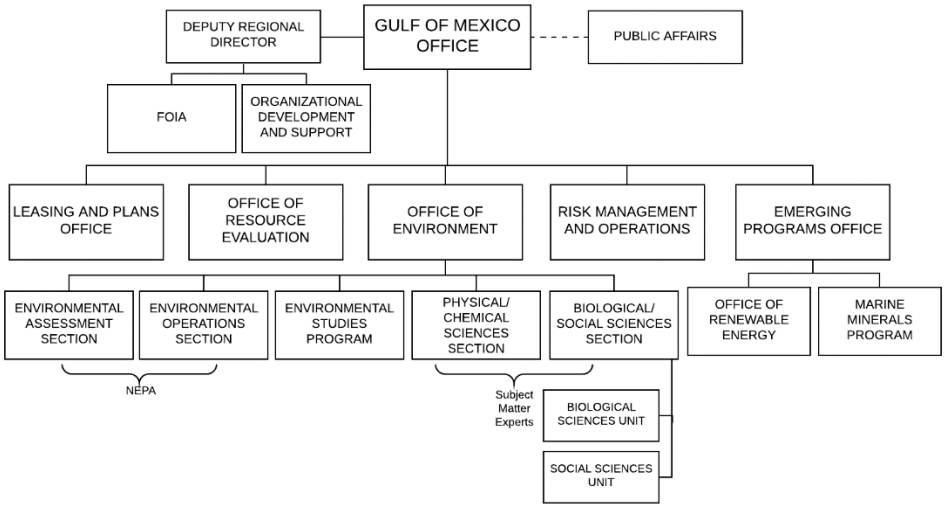
[33] MMP environmental dashboard spreadsheet. Received November 4, 2019.

## GULF OF MEXICO REGION, NEW ORLEANS REGIONAL OFFICE

### OFFICE PROFILE




#### Geographic Scope

Work in the Gulf of Mexico Regional Office is primarily related to oil and gas resources. Ninety-eight percent of the oil and gas from the Outer Continental Shelf (OCS) comes from the Gulf of Mexico (GOM).[34]

#### Office Size

GOM employs approximately 260 people. The Office of Environment (OE) has about 65 people. This is the office where subject matter experts (SMEs) work to develop environmental assessments and environmental studies. [35,36] Across all offices, there are approximately 70-75 that regularly, substantially contribute to studies and assessments.[37]

#### Office Structure

Within OE the SMEs who work on the environmental assessments also work on the environmental studies within the Environmental Studies Program. Other offices in the Gulf of Mexico Region include the Office of the Regional Director (ORD), Office of Public Affairs (OPA), Risk Management and Operations Group (RMOG), Emerging Programs (EP; formerly MMP); Office of Leasing and Plans (LP), and the Office of Resource Evaluation (RE).

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[34] Notes received from New Orleans Office via email.

[35] Notes received from New Orleans Office via email.

[36] More precise data has been requested and will be provided according to notes received from the New Orleans Office.

[37] Scoping interviews.

### Connections to other offices or organizations

OE works closely with EP, LP, RE, and BSEE. This includes all NEPA that supports action decisions for plan, G&G, pipeline, and structure removal permit approvals (LP, RE, and BSEE) and related study needs (EP). Beyond BSEE, most of coordination with outside offices is tied to consultations and NEPA (e.g., NOAA and EPA are either cooperating agencies for NEPA and/or partners in consultations).

All oil- and gas-related activities for the Atlantic OCS Region are administered through GOM. Notably there are no current OCS oil and gas leases in the Atlantic Region.

### Primary Activity(ies) and Priority Issues

- LP manages conventional energy (plans, lease sales, adjudication).
- RE manages coordination of geological and geophysical survey (G&G) activities, review and analysis of seismic data, evaluation of oil and gas and other mineral resources, and worst-case discharge (WCD). RE develops studies to understand mineral resources; these are completed operationally and predominately in-house. RE also develops the oil and gas scenario used in the NEPA analyses for OCS oil and gas lease sales.
- RMOG address financial risk.
- OE manages National Environmental Policy Act (NEPA) programmatic and site-specific analyses, federal consultations (e.g., government-to-government, Endangered Species Act (ESA), Magnuson-Stevens Act (EFH)), and environmental studies).
- OE works on two primary assessment types:
    - Pre-lease (programmatic)
        - Assists HQ with the Five-Year OCS Oil and Gas National Program and Programmatic EIS.
        - Conducts NEPA analyses for GOM regional OCS oil and gas lease sales.
    - Post-lease (activity-specific)
        - Conducts NEPA analysis for site-specific oil and gas exploration, development, and production.
        - Conducts NEPA analysis for pipelines and decommissioning (BSEE and BOEM).
        - Conduct site-specific plans and permit reviews to determine EIS, EA, or Categorical Exclusion.
- Recent studies address applied science, mitigation, and development of baseline information and monitoring.

### Emerging issues

The GOMR studies development process places a large emphasis on applied science and informing GOMR operations. Due to the breadth, density, and temporal extent of existing OCS activities in the region, recent studies have focused on better characterizing impacts, informing mitigation strategies, and access and development of new resources (e.g., renewable, sand, and hydrates). Analyzing cumulative impacts is difficult given the geography of the region.

### Relationship between individuals implementing environmental assessments and those developing environmental studies

Within the Gulf of Mexico Office, the SMEs working on the development of the environmental assessments are the same as those working on the development of environmental studies. SMEs identify potential studies based on information needs for an environmental assessment, write study profiles to attempt to fill those needs, and if a study is funded, act as the Contracting Officer Representative (COR) to ensure the necessary information is obtained through the study. Similarly, once the studies are published, SMEs use the results of the studies in the environmental assessments, consultations, and formulation of mitigations.

### General number of studies conducted/year

According to data obtained from ESPIS, the Region typically conducts between five and 10 studies per year.

### Regulatory Requirements

- NEPA.
- Freedom of Information Act (FOIA).
- Coastal Zone Management Act consistency determination reviews.
- National Historic Preservation Act consultations.
- Endangered Species Act consultations.
- Magnuson Stevens Fisheries Management Act consultations.
- National Marine Sanctuaries consultations.
- Marine Mammal Protection Act coordination.
- Clean Air Act coordination with EPA.
- Clean Water Act coordination with EPA.
- Government to Government consultation.
- Environmental Justice.

### Primary Type of Assessment(s)

GOMR conducts pre-lease and post-lease assessments. Pre-lease NEPA includes Programmatic, Multisale, Supplemental EISs, and Determination of NEPA adequacy (MfR) as part of the Five-Year National OCS Oil and Gas Program. Post-lease NEPA includes site-specific plan and permit reviews with EIS, EA, or Categorical Exclusion. There were 216 environmental assessments conducted in fiscal year 2019 and 334 Categorical Exclusions. [38]

## ENVIRONMENTAL STUDY PROFILE DEVELOPMENT PROCESS

SMEs work on their own, with each other, with other federal and state agency scientists, academic scientists, and other stakeholders to develop study profiles that address particular topics of interest to the region (often identified through group brainstorming session) as well as regional science information needs in general and known data needs for environmental assessment. Study profiles are also developed to address aspects of

[38] Notes received from New Orleans Office via email.

applicable environmental laws such as MMPA, ESA, NHPA, etc. Anyone in BOEM may submit a study idea as well as any member of the public, OCS stakeholders, states, and other federal agencies. A public call for study profile ideas is sent out to regional stakeholders, and the Coastal Marine Institute (CMI) director at Louisiana State University (LSU). Any ideas submitted outside of the public call are passed to an SME for consideration. The Regional Director decides the region's final prioritization and list of studies to be submitted for final approval and inclusion on the NSL.

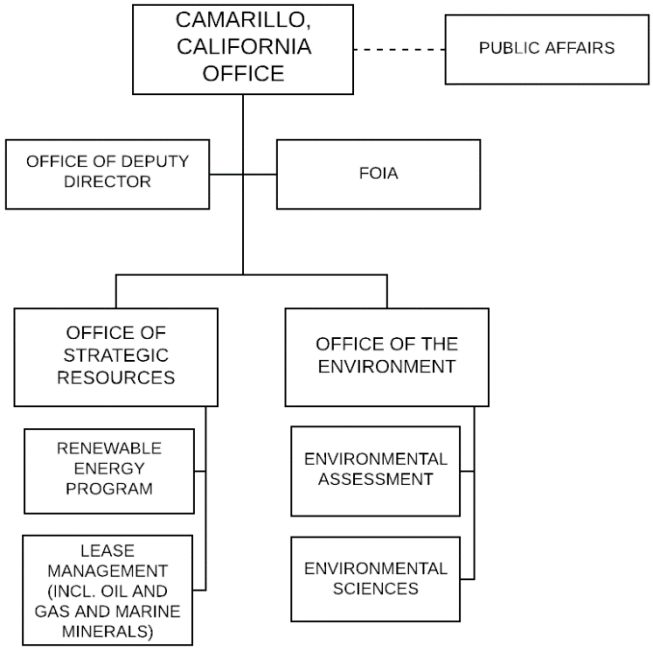
#### ENVIRONMENTAL ASSESSMENT PROCESS

In the GOMR, NEPA analysis is performed by specialists in several disciplines and coordinated by two different structured teams of environmental scientists. There are two OCS oil and gas lease sales per year in the GOM. The GOM OCS oil and gas lease sales are scheduled in the OCS Oil and Gas National Program and analyzed at a high level by HQ in a Programmatic EIS. GOMR conducts NEPA by analyzing the 10 proposed regional lease sales in the OCS Oil and Gas National Program over a 5-year period in a regional Multisale EIS. Prior to each GOM lease sale, another NEPA analysis (Supplemental EIS or Determination of NEPA Adequacy (DNA or MFR) is conducted. The lease sale EISs analyze the generalized effects of activities that might reasonably be expected to result from an OCS oil and gas lease sale since the lease sale in of itself has no environmental consequences.

Other Programmatic NEPA are a Geological and Geophysical (G&G) EIS and a Decommissioning EIS. For the G&G EIS, the site specific NEPA analysis tiers from the *Gulf of Mexico OCS Proposed Geological and Geophysical Activities Western, Central, and Eastern Planning Areas Final Programmatic Environmental Impact Statement*. Upon receiving a complete G&G permit application, BOEM conducts a NEPA review that will result in a categorical exclusion, an EA, or an SEIS. This is done in accordance with the G&G Programmatic EIS's conclusions, NEPA guidelines, and other applicable BOEM policies. BOEM is also working on a programmatic decommissioning EIS to be used by BSEE for their managed activities.

Activities are analyzed in Environmental Assessments (EAs) or Categorical Exclusion Reviews (CERs). This NEPA is done when plans for exploration and development are submitted following an OCS oil and gas lease sale and for G&G, pipeline, and structure removal permits. The post-lease NEPA documents tier from and incorporate the Regional Multisale EIS and the Regional Multisale EIS tiers from and incorporates the Five-Year Programmatic EIS, G&G EIS, and (in the future) Decommissioning EIS. Cumulative impacts are analyzed in the regional Multisale EIS. The detailed review of individual activities and available environmental data at a plan or application level allow for the development of detailed analyses and mitigation recommendations tailored to the proposed activity(ies).

## PACIFIC REGIONAL OFFICE




## OFFICE PROFILE

### Geographic Scope

California, Oregon, Washington, and Hawaii coasts.

### Office Size

The Pacific Regional office is small compared to the other regions, which often causes workload issues. Overall there are approximately 14 individuals that contribute to assessments and/or studies.

### Office Structure

There are two sections addressing environmental work, including Environmental Assessment and Environmental Sciences. There is one SME for each resource topic; they may officially sit in either the Environmental Assessment or Environmental Sciences office, but they are responsible for developing both studies and assessments.

### Connections to other offices or organizations

Large EISs need to be conducted by a third-party contractor. The Region's small size makes them reliant on partnerships with organizations such as USGS, NOAA, and others. California regularly engages with the tribes.

### Primary Activity(ies) and Priority Issues

- Oil and gas activities. These are very different than those in GOM since leasing is not common in the Pacific.
- Renewable energy.
- Marine minerals.

Conducting environmental studies is very useful for outreach, to regional stakeholders. BOEM's environmental studies build credibility with stakeholders and showcase BOEM's expertise in scientific and technical fields.

#### Emerging issues

The Region previously coordinated closely with California to meet CEQA needs. However, due to the changing NEPA process at the Federal level, California no longer wants to be subject to the Federal restrictions, and therefore a single EIS covering both Federal and State waters will no longer be done.

#### Relationship between individuals implementing environmental assessments and those developing environmental studies

The SMEs within the Environmental Assessment and Environmental Sciences divisions develop both the EAs and the environmental studies.

#### General number of studies conducted/year

According to data obtained from ESPIS, the Region conducts approximately one study per year.

#### Primary Type of Assessment(s)

The Pacific Region develops environmental documents under NEPA (Categorical Exclusion Reviews, EAs and EISs). Assessments frequently include impact assessments on all OCS oil and gas projects. [39] Staff at the Pacific office anticipate that upcoming assessments will address decommissioning.

#### Regulatory Requirements

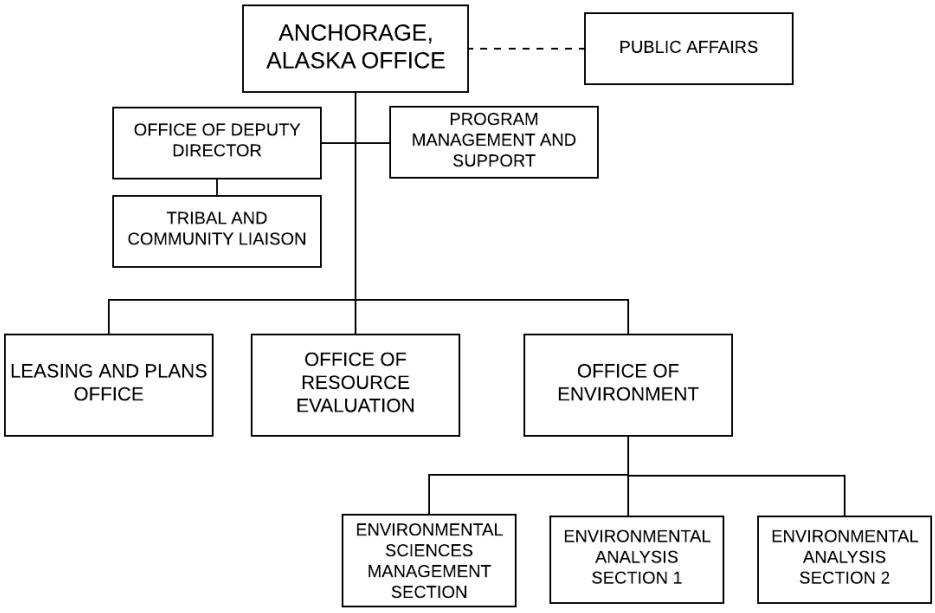
- NEPA.
- ESA.
- MMPA.
- NHPA.
- 30 CFR 250.284(a) "Oil and Gas and Sulfur Operations in the Outer Continental Shelf – Plans and Information."
- OCSLA.
- Energy Policy Act of 2005.
- Magnuson-Stevens Fishery Conservation and Management Act.
- Migratory Bird Treaty Act.

### ENVIRONMENTAL STUDY PROFILE DEVELOPMENT PROCESS

There exists a formal and thorough process for developing ideas and prioritizing studies involving the regional stakeholders, including local tribes, in reviewing and ranking study proposals.

[39] https://www.boem.gov/regions/pacific-ocs-region/pacific-ocs-region-program-offices.

## ALASKA REGIONAL OFFICE




## OFFICE PROFILE

### Geographic Scope

The OCS around Alaska. One billion of the 1.5 billion acres of the OCS are in Alaska.

### Office Size

This office is fairly small compared to the other regions. There are approximately 70 staff members.

### Office Structure

There are four offices under the Regional Director, including the Office of Environment. The OE is split into two environmental assessment sections and has a separate studies unit. Individuals from each of the three sections often work in a team. The OE has between one and three SMEs in the various relevant specialties.

### Connections to other offices or organizations

The Alaska Environmental studies section utilizes its federal partnerships with USGS, NOAA, FWS and others to implement their programs. The Region works with the Coastal Marine Institute at the University of Alaska Fairbanks as a unique relationship by way of a Cooperative Agreement. The EAS sections have a unique relationship with NOAA-NMFS and USFWS to comply with ESA, EFH, and MMPA issues. The Region also interacts frequently with tribes in Alaska both informally as well as formal Government to Government consultations.

### Primary Activity(ies) and Priority Issues

- NEPA activities.
- Oil spill risk analysis.
- Tribal engagement, especially in Alaska.
- Beaufort and Chukchi Seas, Cook Inlet region – historic leasing areas

### Emerging issues

Alaska's first full federal facility was approved in 2018, and this has prompted the need for additional studies that focus within the Beaufort Sea. The BOEM Alaska region has provided substantial scientific knowledge in terms of baselining the marine ecosystem in Alaska waters.

### Relationship between individuals implementing environmental assessments and those developing environmental studies

The office makes efforts for staff from the Studies and EA divisions to interact on a regular basis to identify information needs and how best to meet those needs. The processes have varied over the years and have seen varying levels of success, often in relation to variations in workload for the EA division. In recent years they utilize focus groups that identify and subsequently prioritize information needs for the region by discipline.

### General number of studies conducted/year

Up to approximately 10 per year.

### Primary Type of Assessment(s)

Assessments frequently include impact assessments on all oil and gas projects and related leases. [40]Additionally, Alaska may conduct up to approximately 10 environmental assessments per year.

### Regulatory Requirements

- NEPA.
- OSRA.
- Arctic Rule.
- MMPA, ESA, EFH consultations

## ENVIRONMENTAL STUDY PROFILE DEVELOPMENT PROCESS

The Alaska Region routinely solicits study ideas through an open call directed to stakeholders and the general public as well as to internal staff. They generally receive between 70 and 100 study ideas annually, from internal and external sources. The Studies section performs an initial review to remove duplicates of other BOEM efforts and less relevant ideas. The Region staff ranks the studies across the disciplines, and management compiles a short list of 10 to 15 study ideas for the national STR review. The Region

[40] https://www.boem.gov/about-boem/environmental-impact-statements-and-major-environmental-assessments.

includes a higher level of consideration and dedicated effort to incorporating local and traditional knowledge into their studies than the other regions.

# APPENDIX D: ENVIRONMENTAL STUDIES IN EVALUATION

The complete environmental studies inventory capturing studies that were active between January 1st, 1999 and December 31st, 2019 is presented in the attached Excel file (named AppendixD_EnvironmentalStudiesinEvaluation.xlsx).

# APPENDIX E: ENVIRONMENTAL ASSESSMENTS IN EVALUATION

The complete environmental assessment inventory from June 2020 is presented in the attached Excel file (named AppendixE_EnvironmentalAssessmentsinEvaluation.xlsx). A summary of environmental assessments by type, region, and office is presented in Exhibit E-1.

## EXHIBIT E-1 SUMMARY OF ASSESSMENT INVENTORY 1999-2019

| TYPE OF ASSESSMENT | ALASKA | ATLANTIC | | GULF OF MEXICO | | NATIONAL | | | | PACIFIC | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OIL AND GAS | MARINE MINERALS | RENEWABLE ENERGY | OIL AND GAS | MULTIPLE* | OIL AND GAS | MARINE MINERALS | RENEWABLE ENERGY | MULTIPLE * | OIL AND GAS | RENEWABLE ENERGY | |
| NEPA Environmental Assessment[1,2] | 26 | 3 | 17 | 26 | 1 | 0 | 2 | 1 | 0 | 8 | 0 | **84** |
| NEPA Environmental Impact Statement[1,2] | 14 | 0 | 4 | 29 | 1 | 5 | 0 | 1 | 1 | 0 | 0 | **55** |
| NEPA Reference Documents | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **5** |
| Section 106 Evaluation[3] | 1 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | **26** |
| Essential Fish Habitat Assessment for Magnuson Stevens Act consultation | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** |
| Clean Air Act Compliance | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | **3** |
| ESA Section 7 Biological Assessment | 2 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **15** |
| ESA Section 7 Biological Evaluation | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **7** |
| Resource Assessment Report | 6 | 0 | 0 | 28 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | **40** |
| Oil Spill Risk Analysis | 8 | 0 | 0 | 8 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | **18** |
| Cost-Benefit analysis | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **1** |
| **TOTAL** | **64** | **3** | **60** | **95** | **2** | **11** | **2** | **3** | **2** | **13** | **1** | **256** |

***Notes.***

* Assessment documents that identified all three programs (Oil & Gas, Marine Minerals, and Renewable Energy) are listed as "Multiple."

1. Includes draft/final/programmatic/revised/supplemental versions.
2. Includes files which have FONSIs, FONNSIs, Section 106 evaluations, or Essential Fish Habitat Assessments attached.
3. Includes NHPA findings and Section 106 Programmatic Agreements. For most NHPA findings, their associated assessment document was obtained via web-scraping as well, as such the bundle of documents was counted as 1 unique assessment. The count of Section 106 evaluations presented here is mostly Programmatic Agreements, or NHPA findings for research or commercial leases.
4. Assessments documents pertaining to three programs (oil and gas, renewable energy, and marine minerals) are programmatic documents related to geological and geophysical activities.

# APPENDIX F: PRELIMINARY CITATION ANALYSIS RESULTS

## CITATION ANALYSIS APPROACH

IEc conducted a preliminary citation analysis in RStudio using an automated query to search each assessment's reference list for specific BOEM report and external publication titles. We first developed a references file for each assessment. The query then imported the full name of all BOEM reports and publications and automatically searched all assessment reference files for these document titles. IEc initially intended to run the query on author names and unique report and publication identifiers, such as contract ID; however, this proved less effective for reasons discussed below. IEc relied on report and publication titles as the primary query term to search within each assessment's reference list. IEc will continue to refine the query.

The output was a list of all assessment reference files that included the document title as well as the specific page, line, and surrounding text for each positive query result. To identify unique BOEM reports and publications, we matched these results to unique identifiers (i.e., BOEM report numbers for assessments and contracts identifier for reports and publications) and summarized the results by year and other identifying information (e.g., topic, region). We subsequently tested the query using shortened versions of document titles to minimize potential errors or missed references due to differences in punctuations or formatting.

The following sections describe the preliminary citation analysis results for assessments.

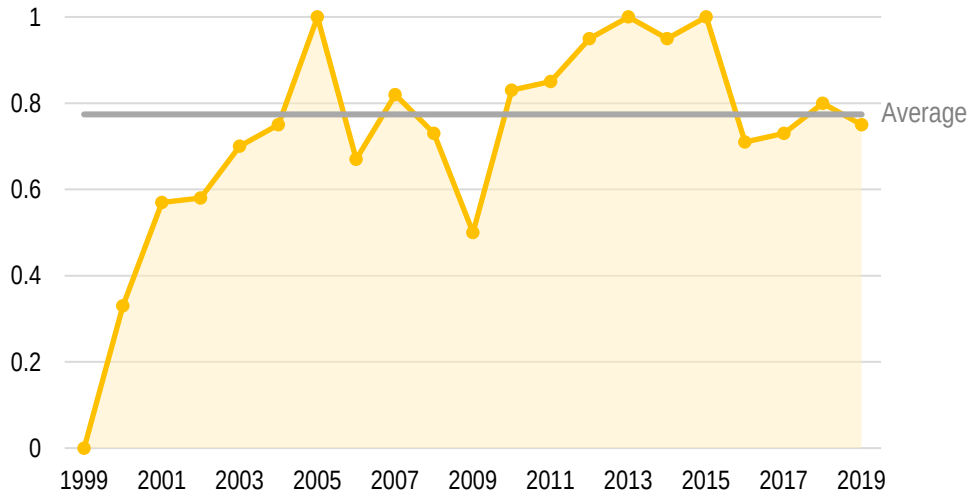
## RESULTS: ASSESSMENTS

Overall, the citation analysis found that roughly 77 percent of assessments cited at least one BOEM study reports or published journal articles. Exhibit F-1 presents the ratio per year, with the red line to indicate the average percentage of assessments that cite at least one BOEM report or publication. Exhibits F-2 and F-3 present the percent of assessments that cited at least one BOEM report or publication by type and region, respectively.

Across the years 1999-2019, there was considerable variation with the ratio ranging from 100 percent in 2005, 2013, and 2015, to as low as 0 percent in 1999 (only one assessment) and 33 percent in 2000 (Exhibit F-1). By assessment type, NEPA EISs had the highest ratio, with all 44 citing at least one BOEM report or publication (Exhibit F-2). By region, Alaska had the highest ratio at 91 percent (Exhibit F-3).

## EXHIBIT F-1 ASSESSMENTS THAT REFERENCE AT LEAST ONE BOEM REPORT OR PUBLICATION, OVER TIME

The ratio of assessments that cited at least one BOEM report or publication varied year to year. Older assesments cited fewer reports or publications. The average across all years was 77 percent.




## EXHIBIT F-2 NUMBER AND PERCENT OF ASSESSMENTS THAT REFERENCE AT LEAST ONE BOEM REPORT OR PUBLICATION, BY TYPE OF ASSESSMENT

| ASSESSMENT TYPE | NUMBER OF ASSESSMENTS | N^ | PERCENT OF ASSESSMENTS |
|---|---|---|---|
| ESA Section 7 Biological Assessment | 15 | 15 | 100% |
| Essential Fish Habitat Assessment | 1 | 1 | 100% |
| NEPA Environmental Impact Statement | 44 | 44 | 100% |
| ESA Section 7 Biological Evaluation | 6 | 6 | 100% |
| NEPA Environmental Assessment | 71 | 76 | 93% |
| Oil Spill Risk Analysis | 11 | 17 | 65% |
| Section 106 Evaluation | 10 | 19 | 53% |
| NEPA Analyses | 1 | 2 | 50% |
| Resource Assessment Report | 12 | 37 | 32% |
| Clean Air Act Compliance | 0 | 3 | 0% |
| Cost-Benefit analysis | 0 | 1 | 0% |

**Note**.
[^] Protected or secured assessment files that IEc did not run through the citation analysis query were excluded from this count. Thus, the total will not match totals presented in Exhibit E-1.

## EXHIBIT F-3 NUMBER AND PERCENT OF ASSESSMENTS THAT REFERENCE AT LEAST ONE BOEM REPORT OR PUBLICATION, BY REGION

| ASSESSMENT REGION | NUMBER OF ASSESSMENTS | N^ | PERCENT OF ASSESSMENTS |
|---|---|---|---|
| Alaska | 53 | 58 | 91% |
| Atlantic | 40 | 53 | 75% |
| Gulf of Mexico | 62 | 84 | 74% |
| National | 10 | 15 | 67% |
| Pacific | 6 | 11 | 55% |

**Note**.
[^] Protected or secured assessment files that IEc did not run through the citation analysis query were excluded from this count. Thus, the total will not match totals presented in Exhibit E-1.

# APPENDIX G: PRELIMINARY ASSESSMENT INFORMATION NEEDS RESULTS

The initial search terms yielded a total of roughly 731 references in NVivo across 152 assessment documents. IEc manually reviewed these initial results and coded each information need to a specific topic (as defined in the Topic Trend Analysis section above). However, when IEc reviewed and coded these in NVivo, many were not actually describing information needs. IEc considered additional search terms such as "best available information" and "incomplete or unavailable information" that yielded a far higher number of positive query results (upwards of 5,000), which indicated these terms are used often. Further review indicated these terms do not necessarily identify a distinct topic as an information need, however. Instead, many sections that use these terms generally discuss information needs without specifying a distinct topic of interest. For example, a section might describe the decision-making process considering information needs or a stakeholder workshop undertaken to identify information needs, without identifying a specific topic.

After manually coding the preliminary information needs results, IEc identified and coded 75 assessments with at least one information need. Of these results, the majority came from the data gap(s) query followed by the future research query. The most mentioned information need by topic was "oil and gas surveys," followed by oil spills and marine mammals. Overall, approximately one quarter of assessments mentioned at least one information need. Exhibit G-1 provides the preliminary information needs results for the top four topics. We recognize the topics associated with the coded information needs are broad. The intent is to highlight the broad topics in need of additional future research, as opposed to specifying the particular study that would address the information need (e.g., "oil and gas" is identified as opposed to "geomorphology of a new potential oil and gas leasing area").

Given the relatively low number of positive query results IEc identified as information needs so far, these should be considered conservative and preliminary. However, the results do provide helpful potential improvements for the assessment year. These include the use of both automatic and manual coding within NVivo to identify, track, and refine our identification of authentic information needs. As more query terms are refined and finalized, as well as once IEc completes additional manual coding, we will conduct additional automatic coding in NVivo that recognizes the coding trends to potentially identify any information needs the keyword queries and manual coding missed. In addition, the initial analysis provides helpful context as we consider how to refine the queries in NVivo to conduct the information needs tracing between assessments and studies and deepens our understanding of how BOEM identifies information needs as part of their assessment process.

## EXHIBIT G-1 NUMBER OF ASSESSMENTS THAT IDENTIFY AN INFORMATION NEED, BY TOPIC

| TOPIC^ | NUMBER OF ASSESSMENTS * |
|---|---|
| Oil and Gas | 49 |
| Marine Mammals | 27 |
| Water Quality | 22 |
| Demographics, Employment, Economics Resources and Environmental Justice | 22 |

**Notes**.
[^] Results are presented for the top activity, biological resource, physical resource, and socio-economic resource. See Exhibit 13 for a list of activities and resources.
[*] Results identify the number of assessments that mentioned at least one information need coded to a topic. They do not identify the number of unique information needs identified.

## EXHIBIT G-2 NUMBER OF ASSESSMENTS THAT IDENTIFY AN INFORMATION NEED BY TOPIC: TOP ACTIVITY, BIOLOGICAL RESOURCE, PHYSICAL RESOURCE, AND SOCIO-ECONOMIC RESOURCE, OVER TIME