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Seabed Mining for Critical Minerals on the U.S. Outer Continental Shelf: Issues for Congress

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SUMMARY

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Seabed Mining for Critical Minerals on the U.S. Outer Continental Shelf: Issues for Congress

The first and second Trump Administrations and the Biden Administration issued executive orders announcing U.S. policies to build and strengthen the resiliency of domestic critical mineral supply chains. For example, on April 24, 2025, as part of a broader national effort to secure reliable supplies for critical minerals, the Trump Administration issued Executive Order 14285, "Unleashing America's Offshore Critical Minerals and Resources." *Critical minerals* include any minerals, elements, substances, or materials that are designated as such by the Secretary of the Interior, based on a determination that they are essential to the economic and national security of the United States, have a supply chain vulnerable to disruption, and play an essential role in manufacturing a product whose absence would significantly affect U.S. economic or national security. One potential source of critical minerals is the U.S. outer continental shelf (OCS), the federally managed ocean area extending from the outer boundaries of state-controlled waters (generally 3 nautical miles [nmi] from shore) to 200 nmi from shore, with some exceptions. Experts estimate that 43 of the U.S. Geological Survey's (USGS's) 2025 list of 60 critical minerals occur on the OCS. Seabed deposits with critical mineral resources may occur across the OCS, but not all deposits on the OCS may be economically viable.

The Bureau of Ocean Energy Management (BOEM), within the Department of the Interior (DOI), administers offshore energy and mineral leasing on the OCS, pursuant to the Outer Continental Shelf Lands Act (OCSLA; 43 U.S.C. §§1331-1356c). BOEM's two primary roles related to critical minerals consist of (1) evaluating the OCS for these resources and (2) leasing submerged lands for critical mineral development. Within BOEM, the Marine Minerals Program seeks to facilitate access to and manage marine minerals on the OCS. To date, the Marine Minerals Program has supported work to evaluate critical mineral resources on the OCS, but BOEM has not issued any leases for critical mineral exploration and development. On February 3, 2025, the Secretary of the Interior, in Secretarial Order 3417, directed all DOI bureaus and offices to identify authorities to facilitate identification, permitting, and leasing of critical minerals on federal lands and the OCS, among other directives. In 2025, two U.S. deep-sea mining companies separately submitted requests to BOEM to commence a leasing process for exploration and potential development of critical minerals on the OCS—one for areas offshore of American Samoa and one for areas offshore of Virginia. BOEM has initiated the process for two potential mineral lease sales in response to these requests. BOEM also is considering two additional lease sales on the OCS offshore of the Commonwealth of the Northern Mariana Islands (CNMI) and offshore of Alaska. BOEM stated that it anticipates holding lease sales offshore of American Samoa in August 2026, CNMI in November 2026, Alaska in December 2026, and Virginia in 2027. For status updates on these leasing processes, see CRS In Focus IF13226, *Seabed Mining on the U.S. Outer Continental Shelf: Background and Recent Developments*.

BOEM works with the National Oceanic and Atmospheric Administration (NOAA) and USGS to determine which areas of the OCS have potential for critical minerals. For example, these three agencies contributed to the *National Strategy for Ocean Mapping, Exploring, and Characterizing the United States Exclusive Economic Zone* (NOMEC Strategy). A goal of the NOMEC Strategy is to "explore and characterize priority areas," such as areas with potential for critical minerals. In addition to the NOMEC Strategy, BOEM is developing the National Offshore Critical Minerals Inventory (NOCMI), a conceptual framework to organize its resource evaluation and environmental research related to critical minerals on the OCS. BOEM, NOAA, and USGS have studied or plan to study multiple areas of the OCS for sites with potential for critical minerals.

As the federal government works to strengthen the United States' domestic critical mineral supply chain, Congress may consider BOEM's role in leasing submerged lands for critical minerals and determining potential mitigation measures to limit adverse impacts to the marine environment. For example, Congress could address leasing considerations for specific OCS areas, including the OCS areas proposed by BOEM offshore of American Samoa, the CNMI, Virginia, and Alaska. Other considerations may include whether BOEM's regulations for marine minerals pose economic burdens for the mining industry. Congress also may consider options for onshore processing of marine minerals should seabed mining advance to a commercial level. Congress may consider how the Jones Act (Section 27 of the Merchant Marine Act of 1920; P.L. 66-261), which requires that waterborne transportation between "U.S. points" be conducted only by vessels built in the United States and owned and crewed by U.S. citizens, might impact critical mineral activities on the OCS. Congress also may weigh potential environmental impacts of mining on the OCS and consider BOEM mitigation measures for such activities.

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Critical minerals are defined in federal statute to include any nonfuel minerals, elements, substances, or materials that the Secretary of the Interior designates as such based on the determination that they are essential to the economic and national security of the United States, have a supply chain vulnerable to disruption, and play an essential role in manufacturing a product whose absence would significantly affect U.S. economic or national security.[1] The first and second Trump Administrations and the Biden Administration each issued executive orders announcing U.S. policies to build and strengthen the resiliency of domestic critical mineral supply chains.[2] In December 2017, President Trump issued Executive Order (E.O.) 13817, "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals," which made it the "policy of the Federal Government to reduce the Nation's vulnerability to disruptions in the supply of critical minerals" and stated that the U.S. government would further this policy by "identifying new sources of critical minerals," among other activities. The Energy Act of 2020 (Division Z of P.L. 116-260) directed the President to coordinate the work of departments and agencies to "facilitate the availability, development, and environmentally responsible production of domestic resources to meet national material or critical mineral needs."[3]

At the start of his second term, President Trump issued E.O. 14154, "Unleashing American Energy," which, among other provisions, encourages energy exploration on the U.S. outer continental shelf (OCS) and aims to establish the United States as the leading producer and processor of nonfuel minerals, including rare earth minerals. President Trump also issued E.O. 14156, "Declaring a National Energy Emergency," which directs agencies to use emergency authorities and other authorities to facilitate, among other things, identification, permitting, and leasing of energy resources, including critical minerals.[4] On April 24, 2025, President Trump issued E.O. 14285, "Unleashing America's Offshore Critical Minerals and Resources," which makes it the priority of the United States to "rapidly develop[] domestic capabilities for the exploration, characterization, collection, and processing of seabed mineral resources."

One potential source of critical minerals is the OCS, the federally managed ocean area extending from the outer boundaries of state-controlled waters (generally 3 nautical miles [nmi] from shore) to at least 200 nmi from shore, with some exceptions (**Figure 1**).[5] Critical minerals may occur on the OCS at the surface of the seabed and marine geologic features (e.g., seamounts), as well as

[1] 30 U.S.C. §1606(a)(3); 30 U.S.C. §1606(c)(4)(A)-(C). Provisions at 30 U.S.C. §1606(c)(4)(A) give the Secretary of the Interior responsibility for identifying and maintaining a list of critical minerals. For more information, see CRS Report R47982, *Critical Mineral Resources: National Policy and Critical Minerals List*, by Linda R. Rowan.

[2] Executive Order (E.O.) 13817 of December 20, 2017, "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals," 82 *Federal Register* 60835, December 26, 2017; E.O. 13953 of September 30, 2020, "Addressing the Threat to the Domestic Supply Chain from Reliance on Critical Minerals from Foreign Adversaries and Supporting the Domestic Mining and Processing Industries," 85 *Federal Register* 62539, October 5, 2020; E.O. 14017 of February 24, 2021, "America's Supply Chains," 86 *Federal Register* 11849, March 1, 2021; E.O. 14154 of January 20, 2025, "Unleashing American Energy," 90 *Federal Register* 8353, January 29, 2025; and E.O. 14285 of April 24, 2025, "Unleashing America's Offshore Critical Minerals and Resources," 90 *Federal Register* 17735, April 29, 2025.

[3] Energy Act of 2020, P.L. 116-260, Division Z, see especially Section 7002(b)(1)(C); 30 U.S.C. §1602(7).

[4] E.O. 14156 of January 20, 2025, "Declaring a National Energy Emergency," 90 *Federal Register* 8433, January 29, 2025.

[5] Most U.S. states have jurisdiction over an area extending 3 nautical miles (nmi) from their officially recognized coasts, under the Submerged Lands Act (43 U.S.C. §§1301 et seq.). Two states (Florida, along its Gulf coast, and Texas) have been held by the Supreme Court to have boundaries extending 9 nmi from shore. The Commonwealth of Puerto Rico also has jurisdiction over an area extending 9 nmi from its coast, whereas other U.S. territories have jurisdiction over areas extending 3 nmi from their coasts. Beyond state and territorially controlled waters, the federally managed outer continental shelf (OCS) generally extends 200 nmi from shore. In some offshore areas, the United States has claimed *extended continental shelf* beyond this 200 nmi limit. In cases where the OCS abuts a neighboring country's continental shelf, the OCS may measure less than 200 nmi from the U.S. shoreline. For more information, see CRS Report RL33404, *Offshore Oil and Gas Development: Legal Framework*, by Adam Vann.

inside some geologic features, such as hydrothermal vents (see "Potential OCS Critical Mineral Deposits," below). The Bureau of Ocean Energy Management (BOEM), within the Department of the Interior (DOI), administers offshore energy and mineral leasing on the OCS under the Outer Continental Shelf Lands Act (OCSLA; 43 U.S.C. §§1331-1356c).[6] According to BOEM, the United States is "lagging other nations in domestic [critical mineral] planning and investments, including scientific research" on critical minerals on the OCS (see textbox below, "Countries Pursuing Seabed Mineral Resources on Their Continental Shelves").[7] On February 3, 2025, the Secretary of the Interior directed all DOI bureaus and offices to identify authorities to facilitate critical mineral activities, as well as activities related to the development of other domestic energy resources, on federal lands and the OCS.[8] In response to E.O. 14285, on June 25, 2025, DOI announced that BOEM and its sister agency, the Bureau of Safety and Environmental Enforcement (BSEE), were updating their policies across all stages of development for offshore critical minerals.[9] E.O. 14285 also directed the Secretary of the Interior to identify which critical minerals may be derived from the seabed, among other actions.

BOEM's two primary roles related to critical minerals consist of (1) evaluating the OCS for these resources and (2) leasing submerged lands for critical mineral development. Within BOEM, the Marine Minerals Program seeks to facilitate access to and manage nonenergy marine minerals on the OCS.[10] The Marine Minerals Program has supported work to evaluate critical mineral resources on the OCS. To date, BOEM has not issued any leases for critical mineral exploration and development.[11] During 2025, in response to two unsolicited mineral lease sale requests from U.S. deep-sea mining companies, BOEM initiated the process for potential mineral lease sales on the OCS offshore of American Samoa and Virginia.[12] BOEM also initiated processes for potential mineral lease sales on the OCS offshore of the Commonwealth of the Northern Mariana Islands

[6] See especially 43 U.S.C. §1337(k)(1).

[7] Bureau of Ocean Energy Management (BOEM), Marine Minerals Program, *Developing a Critical Minerals Environmental Assessment Framework (CMEAF) for Critical Mineral Activities*, February 10, 2023, pp. 1-4, see p. 2 (hereinafter BOEM, *Developing a CMEAF for Critical Mineral Activities*).

[8] U.S. Department of the Interior (DOI), Secretarial Order (S.O.) 3417, "Addressing the National Energy Emergency," February 3, 2025. More specifically, the order directed DOI bureaus and offices to "identify the emergency authorities available to them, as well as all other legal authorities, to facilitate the identification, permitting, leasing, development, production, transportation, refining, distribution, exporting, and generation of domestic energy resources and critical minerals including, but not limited to, on Federal lands and the Outer Continental Shelf."

[9] DOI, "Interior Streamlines Offshore Mineral Policies to Strengthen U.S. Supply Chains and Security," June 25, 2025, https://www.doi.gov/pressreleases/interior-streamlines-offshore-mineral-policies-strengthen-us-supply-chains-and (hereinafter DOI, "Interior Streamlines Offshore Mineral Policies").

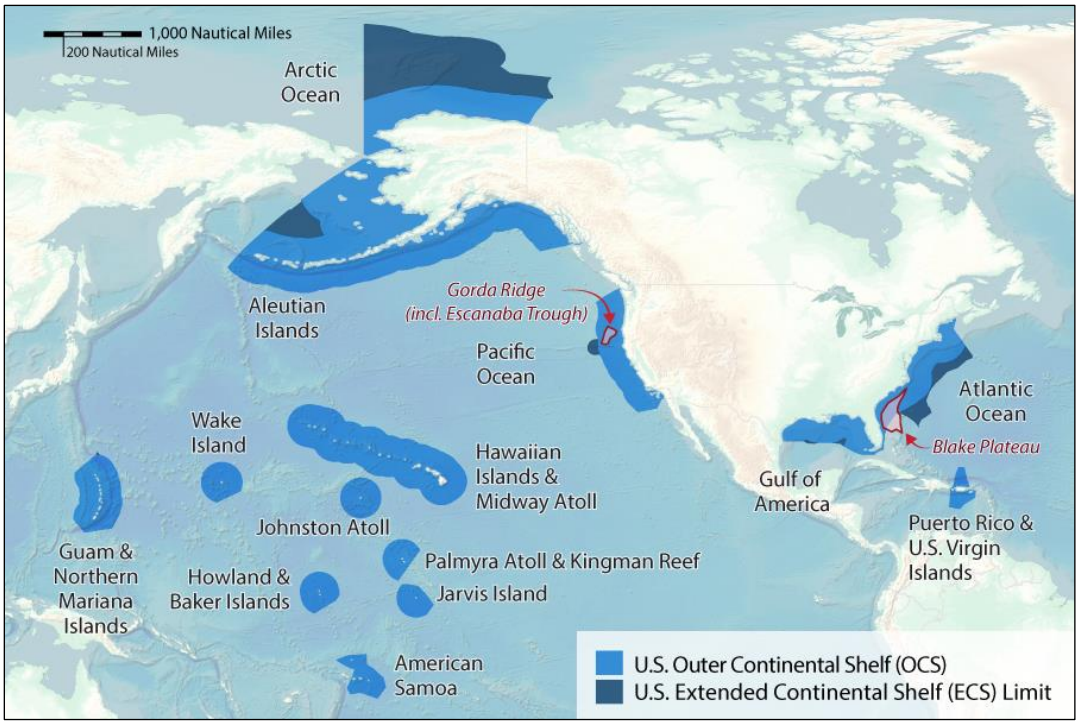
[10] BOEM, "Marine Minerals Program," https://www.boem.gov/sites/default/files/documents/about-boem/MMP-Mission-Vision_2.pdf.

[11] BOEM, "Offshore Critical Minerals," https://www.boem.gov/marine-minerals/critical-minerals (hereinafter BOEM, "Offshore Critical Minerals"). BOEM's Marine Minerals Program also manages sand and gravel leasing for coastal restoration, among other activities; see BOEM, "Current Statistics on Leases," https://www.boem.gov/marine-minerals/current-statistics/current-statistics-leases. For information on some DOI leasing activities in the 20th century, prior to BOEM's establishment, see the section on "Selected Previous Federal Leasing Activities."

[12] BOEM, "BOEM Initiates Process for Potential Mineral Lease Sale Offshore Virginia," December 12, 2025, https://www.boem.gov/newsroom/press-releases/boem-initiates-process-potential-mineral-lease-sale-offshore-virginia; DOI, "Interior Launches Process for Potential Offshore Mineral Lease Sale Near American Samoa," May 20, 2025, https://www.doi.gov/pressreleases/interior-launches-process-potential-offshore-mineral-lease-sale-near-american-samoa; BOEM, "American Samoa Activities," https://www.boem.gov/marine-minerals/american-samoa-activities (hereinafter BOEM, "American Samoa Activities"); and BOEM, "Virginia Mineral Activities," https://www.boem.gov/marine-minerals/critical-minerals/virginia-mineral-activities (hereinafter, BOEM, "Virginia Mineral Activities").

(CNMI) in November 2025 and offshore of Alaska in January 2026.[13] With regard to evaluation, BOEM has produced prospective maps, based on models and expert knowledge, of where critical minerals could be present on the OCS.[14] This report addresses BOEM's critical mineral leasing regulations and leasing activities, its research on the occurrence of critical minerals on the OCS, its work to collect data on baseline environmental conditions, and issues for congressional consideration. For status updates on proposed mineral lease sales, see CRS In Focus IF13226, *Seabed Mining on the U.S. Outer Continental Shelf: Background and Recent Developments*.

Figure 1. U.S. Outer Continental Shelf, Including Extended Continental Shelf



Source: CRS, modified from Bureau of Ocean Energy Management, "Outer Continental Shelf," https://www.boem.gov/oil-gas-energy/leasing/outer-continental-shelf, and using Stephen R. Hartwell et al., *Polygons of Global Undersea Features for Geographic Searches*, U.S. Geological Survey Open-File Report 2014–1040, ver. 1.1, June 2018, https://doi.org/10.3133/ofr20141040.

Notes: The OCS generally extends to 200 nautical miles (nmi) from shore. In some areas, the United States has claimed *extended continental shelf* (ECS) beyond this 200-nmi limit based on geological and geophysical data, thereby extending the outer limits of the OCS. In cases where the OCS abuts a neighboring country's continental shelf, the OCS may measure less than 200 nmi from the U.S. shoreline.

BOEM's program for the OCS is separate from federal activities related to critical mineral exploration in international waters. For critical minerals occurring in areas beyond national jurisdiction, the National Oceanic and Atmospheric Administration (NOAA) has authority to

[13] BOEM, "Commonwealth of Northern Mariana Islands (CNMI) Activities," https://www.boem.gov/marine-minerals/commonwealth-northern-mariana-islands-cnmi-activities (hereinafter BOEM, "CNMI Activities"); and BOEM, "Potential Alaska Offshore Minerals Lease Sale," https://www.boem.gov/regions/alaska-ocs-region/potential-alaska-offshore-minerals-lease-sale (hereinafter BOEM "Potential Alaska Offshore Minerals Lease Sale").

[14] See slide 6 of BOEM's presentation, "Not Just Nodules—Critical Minerals on the Federal Seabed," at the National Academies of Sciences, Engineering, and Medicine (NASEM) Standing Committee on Environmental Science and Assessment for Ocean Energy Management: April Meeting (April 2-3, 2024), https://www.nationalacademies.org/event/42335_04-2024_standing-committee-on-environmental-science-and-assessment-for-ocean-energy-management-april-meeting (hereinafter BOEM, "Not Just Nodules").

issue exploration licenses and commercial recovery permits for hard mineral resources (i.e., seabed minerals).[15] For more information on critical mineral exploration in international waters, see CRS In Focus IF12608, *U.S. Interest in Seabed Mining in Areas Beyond National Jurisdiction: Brief Background and Recent Developments*; and CRS Report R47324, *Seabed Mining in Areas Beyond National Jurisdiction: Issues for Congress*.

Selected Countries Pursuing Seabed Minerals on Their Continental Shelves

Several countries have taken steps to mine for seabed minerals on their continental shelves. For example, the Cook Islands, Japan, and Norway have passed domestic laws related to seabed mining activities in their national waters, invested in the exploration of their continental shelves for marine minerals, and/or developed technology for the purpose of commercial recovery.

The Cook Islands Seabed Mineral Authority (SBMA) estimates that 6.7 billion metric tons of polymetallic nodules—potato-shaped rocks lying on the deep seafloor that may contain cobalt, copper, manganese, nickel, and rare earth elements (REEs)—occur on the country's continental shelf.[16] The SBMA estimates these nodules contain 20 million metric tons of cobalt.[17] In 2022, the SBMA issued three five-year licenses to explore for polymetallic nodules on the Cook Islands continental shelf.[18] As of March 2026, the SBMA has allowed only exploration of the Cook Islands' seabed for polymetallic nodules, not nodule extraction. In February 2025, China and the Cook Islands entered into a memorandum of understanding related to seabed minerals.[19] On August 5, 2025, the United States and the Cook Islands announced their cooperation "to advance scientific research and the responsible development of seabed mineral resources" within the national waters of the Cook Islands.[20] The National Oceanic and Atmospheric Administration subsequently led a three-week expedition in October 2025 to map and explore the Cook Islands' continental shelf.[21] For more information about seabed mining in the Pacific Islands region, see CRS In Focus IF12974, *Seabed Mining Interests Across the Pacific Islands*, by Caitlin Keating-Bitonti and Jared G. Tupuola.

In 2010, Japan experienced REE supply disruptions from China—at the time, Japan was dependent on China for about 90% of its REEs imports.[22] Japan has since explored its continental shelf for seabed mineral deposits, in accordance with a domestic 2007 ocean policy law.[23] In 2017, a Japanese government-owned mining company reportedly mined zinc and other minerals from an inactive hydrothermal vent on Japan's continental shelf.[24] Japan's government also has invested in pumping machinery to extract deep-sea muds for REEs; researchers estimate these muds could meet annual global demands for some REEs, such as yttrium, europium, terbium, and

[15] 30 U.S.C. §§1401-1473.

[16] Cook Islands Seabed Mineral Authority (SBMA), "Seven Hundred Trillion Reasons: The Unseen Scale of Cook Islands' Seabed Resources," August 24, 2024, https://www.sbma.gov.ck/news-3/article-148 (hereinafter Cook Islands SBMA, "Seven Hundred Trillion Reasons").

[17] Cook Islands SBMA, "Seven Hundred Trillion Reasons."

[18] Cook Islands SBMA, "Seabed Minerals Licensing Register," https://www.sbma.gov.ck/register-of-titles.

[19] *Memorandum of Understanding for Blue Partnership in the Field of Seabed Minerals Affairs Between the Seabed Minerals Authority, of the Cook Islands and Ministry of Natural Resources of the People's Republic of China*, February 14, 2025, https://files.constantcontact.com/afb1b923801/878b8e83-1500-42ed-9962-83b5fa866975.pdf.

[20] U.S. Department of State, "Joint Statement on U.S.-Cook Islands Cooperation on Seabed Mineral Resources," press release, August 5, 2025, https://www.state.gov/releases/office-of-the-spokesperson/2025/08/joint-statement-on-u-s-cook-islands-cooperation-on-seabed-mineral-resources/.

[21] National Oceanic and Atmospheric Administration (NOAA), "NOAA-Led Ocean Mapping Expedition in Cook Islands Hailed as a Resounding Success," November 20, 2025, https://www.noaa.gov/news-release/noaa-led-ocean-mapping-expedition-in-cook-islands-hailed-as-resounding-success.

[22] Tatsuya Terazawa, " How Japan Solved Its Rare Earth Minerals Dependency Issue," *World Economic Forum*, October 13, 2023, https://www.weforum.org/stories/2023/10/japan-rare-earth-minerals/.

[23] Government of Japan, *Basic Act on Ocean Policy*, Act No. 33 of April 27, 2007, https://www8.cao.go.jp/ocean/english/act/pdf/law_e.pdf.

[24] Martha Henriques, "Japan's Grand Plans to Mine Deep-Sea Vents," *BBC*, January 6, 2019, https://www.bbc.com/future/article/20181221-japans-grand-plans-to-mine-deap-sea-vents.

dysprosium, for 30-60 years.[25] A Japanese vessel set out on a month-long mission in January 2026 to test the recovery of deep-sea mud.[26] In February 2026, Japan's government reportedly confirmed the successful retrieval of REE-rich mud at depths 4 miles below the ocean surface.[27]

In 2008, Norwegian geologists discovered a hydrothermal vent system located on Norway's continental shelf that occurs along the Arctic Mid-Ocean Ridge.[28] Some geologists have speculated that economic quantities of minerals (e.g., copper, zinc) occur in the deposits surrounding the vent system.[29] In January 2024, the Norwegian Parliament opened an area of its continental shelf for commercial-scale mining activities.[30] Following the Norwegian Parliament's decision, the European Parliament passed a resolution expressing its concerns about Norway opening an area of its continental shelf for mining.[31] In December 2024, Norway's Socialist Left Party blocked the government's plans to offer the country's first deep-sea mining exploration permits in early 2025 due to environmental concerns.[32] In December 2025, the Norwegian government paused deep-sea mining within its territorial waters until 2029.[33]

Potential OCS Critical Mineral Deposits

In 2025, the Secretary of the Interior, acting through the Director of the U.S. Geological Survey (USGS), published a list of 60 critical minerals, of which 43 are known to occur on the OCS (**Figure 2**).[34] In 2025, the United States was 100% net import reliant for six of the critical minerals that occur on the OCS—gallium, manganese, niobium, scandium, titanium, and yttrium.[35] E.O. 14285, among other things, directs the Secretary of the Interior to "identify which critical minerals may be derived from seabed resources and coordinate with the Secretary of Defense and the Secretary of Energy to indicate which critical minerals are essential for applications such as defense infrastructure, manufacturing, and energy."

[25] Yutaro Takaya et al., "The Tremendous Potential of Deep-Sea Mud as a Source of Rare-Earth Elements," *Scientific Reports*, vol. 8 (2018), article 5763.

[26] Mari Yamaguchi, "Japan Retrieves Rare Earth-Rich Mud from Seabed to Lower Reliance on China," Associated Press, February 2, 2026, https://apnews.com/article/japan-rare-earths-china-deep-sea-c97d34522e23ed418cf068f4a0217188 (hereinafter Yamaguchi, "Japan Retrieves Rare Earth-Rich Mud").

[27] Yamaguchi, "Japan Retrieves Rare Earth-Rich Mud."

[28] Rolf B. Pedersen et al., "Discovery of a Black Smoker Vent Field and Vent Fauna at the Arctic Mid-Ocean Ridge," *Nature Communications*, vol. 1 (2010), article 126.

[29] Ben Snook et al., "Characterisation of Mineralised Material from the Loki's Castle Hydrothermal Vent on the Mohn's Ridge," *Minerals*, vol. 8, no. 12 (2018).

[30] Government of Norway, "Norway Gives Green Light for Seabed Minerals," January 10, 2024, https://www.regjeringen.no/en/whats-new/norway-gives-green-light-for-seabed-minerals/id3021433/.

[31] European Parliament, "Motion for a Resolution on Norway's Recent Decision to Advance Seabed Mining in the Arctic," 2024/2520(RSP), January 31, 2024.

[32] Maia Davies, "Norway Suspends Controversial Deep-Sea Mining Plan," *BBC*, December 2, 2024, https://www.bbc.com/news/articles/c9wlj8l8kr7o.

[33] Liam Gilliver, "Norway's Newly Elected Government Has Delayed Issuing Deep-Sea Mining Licenses in the Arctic," *Euro News*, December 12, 2025, https://www.euronews.com/green/2025/12/04/deep-sea-mining-norway-halts-controversial-practice-until-2029.

[34] U.S. Geological Survey (USGS), "Interior Department Releases Final 2025 List of Critical Minerals," November 14, 2025, https://www.usgs.gov/news/science-snippet/interior-department-releases-final-2025-list-critical-minerals (hereinafter USGS, "2025 List of Critical Minerals"). For more information about USGS research on critical minerals, see CRS Report R48005, *Critical Mineral Resources: The U.S. Geological Survey (USGS) Role in Research and Analysis*, by Linda R. Rowan.

[35] USGS, *Mineral Commodity Summaries 2026*, February 6, 2026, p. 11.

Figure 2. Critical Minerals Occurring Offshore

(with subset of minerals occurring on the U.S. outer continental shelf)

Source: Bureau of Ocean Energy Management, "Types of Relevant Marine Mineral Deposits," https://www.boem.gov/marine-minerals/critical-minerals/types-relevant-marine-mineral-deposits.

Seabed deposits with critical mineral resources likely occur throughout the OCS, but not all deposits may be economically viable.[36] The types and quantities of critical minerals within seabed deposits vary geographically based on local seawater chemistry, porewater chemistry with seafloor sediments, or the resulting seawater chemistry from hot hydrothermal fluids interacting with seafloor crustal rocks.[37] BOEM has identified five main categories of mineral deposits on the OCS that may contain critical minerals: nearshore heavy mineral sands (known as placers), phosphorites, hydrothermal deposits (also known as polymetallic sulfide deposits), ferromanganese crusts, and polymetallic nodules (**Table 1**).[38] Each deposit type is described below, generally in order from deposits occurring nearshore to farthest offshore.

[36] BOEM and USGS, "America's Offshore Critical Mineral Resources," fact sheet, p. 5, https://www.boem.gov/sites/default/files/documents/marine-minerals/Critical%20Mineral%20State.pdf (hereinafter BOEM and USGS, "America's Offshore Critical Mineral Resources").

[37] USGS, "Global Marine Mineral Resources," June 15, 2022, https://www.usgs.gov/centers/pcmsc/science/global-marine-mineral-resources.

[38] Unless otherwise noted, information in the remainder of this section is drawn from BOEM, "Types of Relevant Marine Mineral Deposits," https://www.boem.gov/marine-minerals/critical-minerals/types-relevant-marine-mineral-deposits.

Table 1. Mineral Deposits on the U.S. Outer Continental Shelf

Deposit	Description	Depth (meters)	Potential Critical Minerals
Placers (heavy mineral sands)	Heavy minerals mixed with other mud- and sand-sized grains deposited by a river or glacier in a marine nearshore environment	< 200	Platinum, silver, tin, titanium, zirconium, and some REEs
Phosphorites	Sedimentary rocks containing a high concentration of calcium phosphate that generally occur along continental shelves, slopes, and seamounts	< 1,000	Phosphate, uranium, and some REEs
Hydrothermal deposits (polymetallic sulfide deposits)	Mineral accumulations that form from hot waters emitted at seafloor spreading ridges and areas of undersea volcanic activity	100 to 7,000	Antimony, bismuth, copper, gallium, germanium, silver, tellurium, and zinc
Ferromanganese crusts	Mineral encrustations that form on hard surfaces from seawater rich in dissolved metals occurring in volcanically active regions such as seamounts	600 to 7,000	Cobalt, copper, manganese, nickel, platinum, scandium, tellurium, and some REEs
Polymetallic nodules	Potato-shaped rocks composed of concentric layers that form over millions of years as minerals from the seawater and sediment pore water accrete around a hard nucleus (e.g., shark tooth, whale ear bone, rock fragment) lying on the deep seafloor	4,000 to 7,000	Cobalt, copper, lithium, manganese, nickel, tellurium, titanium, and some REEs

Sources: Bureau of Ocean Energy Management (BOEM), "Types of Relevant Marine Mineral Deposits," https://www.boem.gov/marine-minerals/critical-minerals/types-relevant-marine-mineral-deposits; and BOEM and U.S. Geological Survey, "America's Offshore Critical Mineral Resources," fact sheet, pp. 1-2, https://www.boem.gov/sites/default/files/documents/marine-minerals/Critical%20Mineral%20State.pdf.

Notes: REE = rare earth element. REEs that may be found within marine deposits include cerium, dysprosium, erbium, europium, gadolinium, holmium, lanthanum, lutetium, neodymium, praseodymium, samarium, terbium, thulium, ytterbium, and yttrium.

Of the five types of deposits, the nearest to shore are *placers*—sedimentary deposits concentrated with heavy minerals that formed by surface weathering and erosion of primary rocks (e.g., bedrock) that are transported and redeposited by gravity, water, glacial activity, or wind. Marine placers typically occur in coastal nearshore environments and may contain critical minerals, such as platinum, silver, tin, titanium, zirconium, and some rare earth elements (REEs).

Phosphorites are sedimentary rocks containing a high concentration of calcium phosphate. These rocks generally occur in water depths less than 1,000 meters (m) along continental shelves and slopes, as well as on seamounts. Depending on the location, these deposits may contain critical minerals, such as phosphate, uranium, and some REEs.

Hydrothermal deposits (also known as *polymetallic sulfide deposits*) can precipitate from hot waters emitted at seafloor spreading ridges and areas of undersea volcanic activity, such as the Juan de Fuca Ridge located off the Pacific Northwest coast of North America. These deposits generally occur in water depths ranging from 100 to 7,000 m. Hydrothermal deposits may contain critical minerals, such as antimony, bismuth, copper, gallium, germanium, silver, tellurium, and zinc.

Ferromanganese crusts are layers (typically less than 25 centimeters thick) of mineral encrustations that form on hard surfaces (e.g., rocks) from seawater rich in dissolved metals occurring in volcanically active regions, such as seamounts and ridges, at water depths of 600 to 7,000 m. These crusts generally form on the tops and flanks of seamounts, precipitating at a growth rate of less than 1 to 4 millimeters per million years. Ferromanganese crusts may contain critical minerals such as cobalt, copper, manganese, nickel, platinum, scandium, tellurium, and some REEs.

Polymetallic nodules are potato-shaped rocks lying on the deep seafloor, typically at water depths of 4,000 to 7,000 m. The nodules are formed over millions of years as minerals from the seawater and sediment pore water accrete around a hard nucleus (e.g., shark tooth, whale ear bone, rock fragment), forming concentric layers. Critical minerals contained in polymetallic nodules may include cobalt, copper, lithium, manganese, nickel, tellurium, titanium, and REEs.

Three of these five types of marine deposits—hydrothermal deposits, ferromanganese crusts, and polymetallic nodules—also occur beyond the OCS in international waters.[39] Some countries are actively exploring areas of the international seabed with potential for high concentrations of certain critical minerals.[40] NOAA, pursuant to the Deep Seabed Hard Mineral Resources Act (P.L. 96-283), currently is considering applications for seabed mining activities for areas beyond national jurisdiction in the Pacific Ocean.[41]

Two types of deposits—placers and phosphorites—tend to occur in shallow water environments, potentially including U.S. state waters (see **Table 1**). Oregon, Washington, California, Hawaii, American Samoa, and Guam prohibit mining in the waters under their jurisdiction (i.e., the first 3 nmi seaward of the coastline).[42] These U.S. states and territories may allow for certain mining exceptions (e.g., beach replenishment, scientific research).

Mineral Leasing on the U.S. Outer Continental Shelf

BOEM has authority under the OCSLA to lease areas of the OCS for critical mineral exploration and development.[43] Pursuant to this authority, BOEM has issued regulations (30 C.F.R. Parts 580-582) addressing leasing for non-oil and gas minerals (also referred to by BOEM as *hard*

[39] For example, see International Seabed Authority (ISA), "Exploration Contracts," https://www.isa.org.jm/exploration-contracts/ (hereinafter ISA, "Exploration Contracts").

[40] ISA, "Exploration Contracts."

[41] NOAA, "Deep Seabed Hard Minerals Mining," https://oceanservice.noaa.gov/deep-seabed-mining/. For information about U.S. involvement in international seabed mining activities, see CRS Report R47324, *Seabed Mining in Areas Beyond National Jurisdiction: Issues for Congress*, by Caitlin Keating-Bitonti; and CRS In Focus IF12608, *U.S. Interest in Seabed Mining in Areas Beyond National Jurisdiction: Brief Background and Recent Developments*, by Caitlin Keating-Bitonti.

[42] Or. Rev. Stat. §196.405 (1991); S.B. 5145, 67th Leg., Reg. Sess. (Wash. 2021); A.B. 1832, 2021–2022 State Leg., Reg. Sess. (Cal. 2022); S.B. 2575, 32nd Leg., Reg. Sess. (Haw. 2024); Office of Governor Lemanu P.S. Mauga, Exec. Order No. 006-2024: An Order Implementing a Moratorium on Deep Seabed Mining Exploration and Exploitation Activities (Am. Sam. July 24, 2024); and Pub. L. No. 38-129 (Guam 2026).

[43] Provisions of the Outer Continental Shelf Lands Act of 1953 (OCSLA) at 43 U.S.C. §1337(k)(1) authorize the Secretary of the Interior to grant leases "of any mineral other than oil, gas, and sulphur in any area of the outer Continental Shelf not then under lease for such mineral." In 2022, P.L. 117-169, commonly known as the Inflation Reduction Act of 2022 (IRA), expanded the definition of the OCS in the OCSLA to include submerged lands offshore of U.S. territories. As of January 13, 2026, BOEM's regulations for critical mineral leasing continue to reflect the previous definition of the OCS, prior to the IRA amendment.

minerals), including critical minerals.[44] To date, BOEM has not held any lease sales for critical minerals on the OCS or issued any critical mineral leases.[45] In 2025 and early 2026, BOEM initiated the process for four potential critical mineral lease sales in federal waters off the coasts of American Samoa, the CNMI, Virginia, and Alaska.[46] (See the sections below for further discussion.) Separately, on June 25, 2025, DOI announced that BOEM and BSEE were "updating [critical mineral] policies across all stages of development" in order to "reduce delays, improve coordination and provide greater certainty for industry, all while upholding key environmental safeguards."[47] DOI stated that BOEM and BSEE would consider offshore critical mineral projects for expedited permitting under emergency procedures,[48] and that approvals for multiple types of activities would be "fast-tracked by minimizing unnecessary paperwork and compliance steps."[49] On February 24, 2026, BOEM published a proposed rule to make "administrative revisions" to its hard mineral leasing regulations.[50]

The hard mineral leasing regulations cover *prospecting* (pre-lease exploration for marine minerals, including geological and geophysical [G&G] explorations), *leasing* of rights for mineral development, and *operations* under a lease.[51] Commercial *prospecting* for marine minerals, such as through G&G surveys, requires a BOEM-issued permit unless conducted by an existing leaseholder in that entity's lease area.[52] Data acquired through prospecting must be shared with BOEM.[53] A prospecting permit is separate from a lease to develop minerals in an area, and the prospecting permit does not convey any preferential right to a lease.[54] BOEM's current prospecting regulations state that BOEM will evaluate proposed prospecting activities for adverse impacts on the environment, except for specified activities that do not require environmental analysis.[55] BOEM's February 2026 proposed rule would eliminate these provisions, stating that other laws and regulations cover the framework for BOEM's environmental analysis of permit

[44] Regulations elsewhere in Title 30, Subchapter B, cover leasing for oil, gas, and sulfur. Also see BOEM, "Competitive Leasing of OCS Marine Minerals," https://www.boem.gov/marine-minerals/obtaining-marine-minerals/competitive-leasing-ocs-marine-minerals.

[45] For information on some DOI leasing activities in the 20th century, prior to BOEM's establishment, see the section on "Selected Previous Federal Leasing Activities."

[46] BOEM, "American Samoa Activities"; BOEM, "CNMI Activities"; BOEM, "Virginia Mineral Activities"; and BOEM, "Potential Alaska Offshore Minerals Lease Sale."

[47] DOI, "Interior Streamlines Offshore Mineral Policies." President Trump's April 24, 2025, executive order on critical minerals (E.O. 14285) directs the Secretary of the Interior to develop an "expedited" process for reviewing and approving OCS critical mineral prospecting permits, as well as for granting leases.

[48] These procedures respond to President Trump's declaration of a national energy emergency in E.O. 14156. For more information, see DOI, "Department of the Interior Implements Emergency Permitting Procedures to Strengthen Domestic Energy Supply," press release, April 23, 2025, https://www.doi.gov/pressreleases/department-interior-implements-emergency-permitting-procedures-strengthen-domestic.

[49] DOI, "Interior Streamlines Offshore Mineral Policies."

[50] BOEM, "Administrative Revisions to Regulations Related to Outer Continental Shelf Minerals Other Than Oil, Gas, and Sulphur," 91 *Federal Register* 8803, February 24, 2026 (hereinafter BOEM proposed rule, "Administrative Revisions").

[51] 30 C.F.R. Parts 580-582.

[52] Separate rules apply for activities undertaken for purposes of scientific research (30 C.F.R. §580.11).

[53] 30 C.F.R. §§580.24, 580.40-580.52. The data generally are protected from public disclosure for specified lengths of time under BOEM regulations at 30 C.F.R. §§580.70-580.73.

[54] BOEM and USGS, "America's Offshore Critical Mineral Resources," p. 5. For further discussion of this point, see the section on "Preferential Rights to Lease Critical Mineral Prospecting Areas."

[55] 30 C.F.R. §§580.29-580.30.

applications.[56] The proposed rule also would eliminate a requirement to notify states, local governments, and others of permits and environmental assessments.[57]

The *leasing* process may start with an unsolicited request for a lease sale (as was the case for BOEM's current processes offshore of American Samoa and Virginia) or by BOEM's own initiative (as was the case for BOEM's current processes for the CNMI and Alaska).[58] In either case, BOEM may publish in the *Federal Register* a request for information and interest (RFI), which could specify particular areas or minerals to be considered.[59] For example, BOEM published RFIs regarding potential critical mineral leasing offshore of American Samoa (June 2025), the CNMI (November 2025), Alaska (January 2026), and Virginia (June 2026).[60] DOI's press release of June 25, 2025, noted that, going forward, "to speed up the leasing process," BOEM may identify potential leasing areas "right away, without first issuing a formal request for information."[61] The regulations also provide that BOEM may form a joint state-federal task force with adjacent state governors as a mechanism for planning, coordination, and consultation about the leasing process. DOI's June 25, 2025, press release stated that BOEM will not form such task forces, in light of efforts to speed up the leasing process.[62] Separately, BOEM's February 2026 proposed rule would reduce the number of days allowed to BOEM to respond to an unsolicited lease request from 45 days to 28 days.[63]

Under the regulations, BOEM selects the areas to be offered at a lease sale based on industry interest, resource information, environmental data, and the recommendations of any joint state-federal task force.[64] Leases are awarded through a competitive cash auction.[65] Unless otherwise specified in the leasing notice, the lease would include rights to all minerals within the leased area except for oil, gas, sulfur, and certain other reserved commodities.[66] Agreements for the use of OCS sand, gravel, and shell resources may be negotiated noncompetitively, outside of the lease sale process.[67]

To conduct *operations* once a lease is secured, a lessee must obtain BOEM's approval of multiple plans (along with any permits or approvals that may be required from other agencies under

[56] BOEM proposed rule, "Administrative Revisions."

[57] 30 C.F.R. §580.31.

[58] 30 C.F.R. §§581.11-581.12.

[59] 30 C.F.R. §581.12.

[60] BOEM, "Commercial Leasing for Outer Continental Shelf Minerals Offshore American Samoa—Request for Information and Interest," 90 *Federal Register* 32015, June 16, 2025 (hereinafter BOEM, "RFI for American Samoa"); BOEM, "Commercial Leasing for Outer Continental Shelf Minerals Offshore the Commonwealth of the Northern Mariana Islands-Request for Information and Interest," 90 *Federal Register* 50872, November 12, 2025 (hereinafter BOEM, "RFI for CNMI"); BOEM, "Commercial Leasing for Outer Continental Shelf Minerals Offshore Alaska-Request for Information and Interest," 91 *Federal Register* 3923, January 29, 2026 (hereinafter BOEM, "RFI for Alaska"); and BOEM, "Commercial Leasing for Outer Continental Shelf Minerals Offshore the Commonwealth of Virginia-Request for Information and Interest," 91 *Federal Register* 37417, June 23, 2026 (hereinafter BOEM, "RFI for Virginia").

[61] DOI, "Interior Streamlines Offshore Mineral Policies." The BOEM regulations (30 C.F.R. §581.12) state that the Secretary of the Interior "may" issue an RFI but do not require the Secretary to do so.

[62] DOI, "Interior Streamlines Offshore Mineral Policies."

[63] BOEM proposed rule, "Administrative Revisions."

[64] 30 C.F.R. §581.14.

[65] 30 C.F.R. §§581.18-581.21. DOI's June 25, 2025, press release (DOI, "Interior Streamlines Offshore Mineral Policies") stated that BOEM would offer "favorable lease terms" at critical mineral auctions, including "lower minimum bids and waivers for some rental fees."

[66] 30 C.F.R. §581.8.

[67] 30 C.F.R. Part 583.

various laws).[68] A *delineation plan* describes activities the lessee will take to locate and characterize the minerals; it also generates information needed for subsequent plans.[69] Among other information, this includes the mineral(s) of primary interest and how they will be located and evaluated, what types of equipment will be used, where test mining will occur, anticipated impacts to the marine environment and how they will be addressed, and potential conflicts with other ocean users. A *testing plan* governs the lessee's program for pilot mining and testing activities, including information on testing locations and methods, equipment to be used, anticipated environmental impacts and how they will be addressed, and other information.[70] For subsequent development and production, the lessee must obtain approval of a *mining plan* that includes "comprehensive detailed descriptions, illustrations, and explanations of the proposed OCS mineral development, production, and processing activities," as well as plans to address environmental impacts and plans to clear the lease area when mining activities end.[71]

BSEE enforces a lessee's compliance with its BOEM-approved plans. BSEE has promulgated regulations that apply to critical mineral exploration and development,[72] but to date these activities have not occurred on the OCS. Among other things, the BSEE regulations include provisions for inspections of mining operations, environmental protection measures, penalties for violating requirements and plans, and circumstances under which BSEE would suspend operations and production.

OCS Areas Currently Being Considered for Leasing

In 2025, BOEM initiated the process for three potential mineral lease sales in federal waters offshore of American Samoa, the CNMI, and Virginia. BOEM also initiated the process for a potential mineral lease sale on the OCS offshore of Alaska in January 2026. These four potential mineral lease sales are discussed below.

American Samoa

In February 2024, BOEM received an unsolicited request from Impossible Metals, a U.S. deep-sea mining company, for a lease sale for deep-sea polymetallic nodules within the OCS offshore of American Samoa (**Figure 1**).[73] According to BOEM, the applicant planned to target cobalt, lithium, manganese, nickel, and REEs from the nodules (**Figure 2**).[74] Following an internal review of the request, according to BOEM, "the BOEM Director opted not to initiate the steps leading to the offer of OCS minerals for lease, determining that further engagement with the government of American Samoa regarding this matter would be appropriate before any further

[68] For example, some offshore mineral exploration and development activities could require authorizations from NOAA under Section 101(a) of the Marine Mammal Protection Act (16 U.S.C. §1371(a)(5)(A)-(E)) and Section 7 of the Endangered Species Act (16 U.S.C. §1536), or from the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act (33 U.S.C. §1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403).

[69] 30 C.F.R. §582.22.

[70] 30 C.F.R. §583.23.

[71] 30 C.F.R. §583.24.

[72] 30 C.F.R. Parts 280-282.

[73] Email correspondence from BOEM to CRS, February 25, 2025; and remarks of Oliver Gunasekara, then-CEO and cofounder, Impossible Metals, in U.S. Congress, House Committee on Natural Resources, Subcommittee on Oversight and Investigations, *Exploring the Potential of Deep-Sea Mining to Expand American Mineral Production*, hearing, 119th Cong., 1st sess., April 29, 2025 (hereinafter *Exploring the Potential of Deep-Sea Mining to Expand American Mineral Production*, hearing).

[74] Email correspondence from BOEM to CRS, February 25, 2025.

action."[75] The then-governor of American Samoa, Lemanu Peleti Mauga, issued an order in July 2024 banning deep seabed mining in the territorially controlled waters directly off American Samoa (i.e., the waters extending 3 nmi seaward from the shore).[76] On January 3, 2025, Pulaali'i Nikolao Pula began his four-year term as governor of American Samoa.[77] In part due to the new American Samoa administration,[78] on April 8, 2025, Impossible Metals submitted another request to BOEM to commence a leasing process for exploration and potential development of critical minerals on the OCS offshore of American Samoa.[79] On June 16, 2025, BOEM published an RFI in the *Federal Register*, initiating the first formal step in the offshore mineral lease sale process.[80] On July 15, 2025, BOEM announced it would extend the comment period for the RFI in response to a request from the governor of American Samoa.[81] The governor reiterated that the Government of American Samoa's moratorium on seabed mining set forth in its 2024 E.O. "has not been repealed, and therefore, remains in full force and effect."[82] On November 10, 2025, BOEM announced the completion of its *Area Identification* (Area ID) decision memo for American Samoa, which determines the OCS areas that are to undergo environmental review for a proposed critical mineral lease sale, pursuant to the National Environmental Policy Act (42 U.S.C. §§4321 et seq.).[83] The area identified for review for potential leasing in the Area ID memo was larger than the area initially proposed in the RFI, and may include polymetallic nodules and ferromanganese crust deposits.[84] According to BOEM, several companies in addition to Impossible Metals expressed an interest in potential OCS mineral leasing offshore of American Samoa.[85] BOEM stated in its FY2027 budget justification that it anticipates holding a lease sale for American Samoa in August 2026.[86]

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[75] Email correspondence from BOEM to CRS, February 25, 2025.

[76] Office of the Governor of American Samoa, Executive Order 006-2024, "An Order Implementing a Moratorium on Deep Seabed Mining Exploration and Exploitation Activities," July 24, 2024, https://www.americansamoa.gov/_files/ugd/4bfff9_cea25f51dcb84d0bbe5bbac7db513477.pdf.

[77] Government of American Samoa, "Governor & Lt. Governor," https://www.americansamoa.gov/biographies.

[78] *Exploring the Potential of Deep-Sea Mining to Expand American Mineral Production*, hearing.

[79] DOI, "Interior Launches Process for Potential Offshore Mineral Lease Sale Near American Samoa," May 20, 2025, https://www.doi.gov/pressreleases/interior-launches-process-potential-offshore-mineral-lease-sale-near-american-samoa.

[80] BOEM, "RFI for American Samoa."

[81] BOEM, "Commercial Leasing for Outer Continental Shelf Minerals Offshore American Samoa—Request for Information and Interest; Extension of Comment Period," 90 *Federal Register* 25369, July 16, 2025. Also see BOEM, "American Samoa Activities."

[82] Government of American Samoa, "Leadership United: Governor and Lieutenant Governor Lead Unified Effort on Seabed Mining," June 23, 2025, https://www.americansamoa.gov/leadershipunited.

[83] BOEM, "American Samoa Activities."

[84] BOEM, "Area Identification Recommendation for the American Samoa Outer Continental Shelf (OCS) Mineral Leasing Process," October 15, 2025, pp. 5-6, https://www.boem.gov/marine-minerals/area-id-memoamerican-samoa-ocs-mineralssignedwithattachementpdf.

[85] Memorandum from Douglas P. Boren, Regional Director, Pacific Regional Office, to Matthew N. Giacona, Acting Director of BOEM, "Area Identification Recommendation for the American Samoa Outer Continental Shelf (OCS) Mineral Leasing Process," October 15, 2025, p. 3, https://www.boem.gov/sites/default/files/documents/marine-minerals/Area%20ID%20Memo_American%20Samoa%20OCS%20Minerals_Signed_With_Attachement.pdf.

[86] DOI, *Budget Justifications and Performance Information, Fiscal Year 2027: Marine Minerals Administration*, p. 35, https://www.doi.gov/sites/default/files/documents/2026-04/fy2027greenbookmma.pdf (hereinafter DOI, *FY2027 Budget Justification*). In its FY2027 budget proposal, DOI announced an intent to unify BOEM and the Bureau of Safety and Environmental Enforcement (BSEE) into a single agency to be called the Marine Minerals Administration, and DOI published the agencies' FY2027 budget justification under that agency name.

Commonwealth of the Northern Mariana Islands

On November 12, 2025, BOEM published an RFI in the *Federal Register* for a lease sale for minerals on the OCS offshore of the CNMI.[87] BOEM stated that the RFI area includes ferromanganese crust and polymetallic nodules, as identified by USGS (**Table 1**).[88] While the RFI area is located entirely within the OCS east of the CNMI, the "southern boundary of the RFI Area is approximately equal distance between the islands of Guam and Rota, the southernmost island of the CNMI."[89] On November 15, 2025, the governors of CNMI and Guam submitted a joint request to BOEM to extend the RFI comment period by an additional 120 days.[90] In their request, the governors stated that the RFI area affects both U.S. territories and that "any federal action in this space must therefore account for the perspectives and interests of both territorial governments." Given that the CNMI and Guam "share a connected ocean ecosystem," the governors expressed concerns about transboundary impacts associated with offshore mineral activities. BOEM extended the initial 30-day comment period for the RFI to January 12, 2026, an additional 30 days.[91] On January 9, 2026, the Guam Legislature passed a resolution "reaffirming" its 2021 call for a moratorium on deep sea mining on the OCS and "objecting" to BOEM's RFI related to the CNMI.[92] On June 4, 2026, the governor of Guam signed a bill into law that bans mining and prohibits mining equipment and vessels from entering waters under Guam's jurisdiction unless authorized by both the government of Guam and relevant federal authority.[93] Guam has larger port facilities than the CNMI, and restricted access to Guam's commercial port could have implications for potential seabed mining activities in federal waters offshore of the CNMI.[94]

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[87] BOEM, "RFI for CNMI."

[88] For example, in July 2025, a research expedition partially supported by BOEM, NOAA, and USGS announced the discovery of polymetallic nodules in "ultra-deep waters" near the Mariana Trench off the CNMI. See NOAA, "New Autonomous Vehicle Helps Advance Understanding of the Deep Ocean and Its Critical Minerals," July 7, 2025, https://oceanexplorer.noaa.gov/news/orpheus-update/; Peter J. Hanlon, "Autonomous Vehicle's Search in Mariana Trench Helps Advance Understanding of Deep Sea and Its Critical Minerals," *Phys.org*, July 7, 2025, https://phys.org/news/2025-07-autonomous-vehicle-mariana-trench-advance.html (hereinafter Hanlon, "Autonomous Vehicle's Search in Mariana Trench"); and Orpheus Ocean, "News: Orpheus Ocean Advances Deep Sea Research in the Mariana Islands," July 7, 2025 (hereinafter Orpheus Ocean, "News: Orpheus Ocean Advances Deep Sea Research in the Mariana Islands").

[89] BOEM, "RFI for CNMI."

[90] Letter from Governor of the Northern Mariana Islands David M. Apatang and Governor of Guam Lourdes A. Leon Guerrero to Matthew Giacona, Acting Director of BOEM, "Request for Public Comment Period Extension for Docket No. BOEM-2025-0351," November 15, 2025. Guam Delegate James Moylan and CNMI Delegate Kimberlyn King-Hinds also requested that BOEM extend the public comment period (Representative James Moylan, "Moylan, King-Hinds Call for Extension of Comment Period on Potential Deep-Sea Mining Near Guam and Rota," November 24, 2025, https://moylan.house.gov/media/press-releases/moylan-king-hinds-call-extension-comment-period-potential-deep-sea-mining-near).

[91] BOEM, "Commercial Leasing for Outer Continental Shelf Minerals Offshore the Commonwealth of the Northern Mariana Islands-Request for Information and Interest; Extension of Comment Period and Technical Correction," 90 *Federal Register* 58052, December 15, 2025. Also see BOEM, "CNMI Activities."

[92] Guam Senate Resolution No. 132-38 (COR), "Relative to Reaffirming the Guam Legislature's Call for a Moratorium on Deep Sea Mining in Protection of the Legal, Economic, Social, Cultural, and Environmental Rights of the People of Guam, and Objecting to the Proposal and Request For Information (RFI) by the United States Department of Interior's Bureau of Ocean Energy Management (BOEM) for 'Commercial Leasing for Outer Continental Shelf Minerals Offshore The Commonwealth Of The Northern Mariana Islands,'" introduced December 23, 2025.

[93] Pub. L. No. 38-129 (Guam 2026).

[94] Joe Taitano, "Governor Signs Ban On Deep-Sea Mining, Violators Face $50K Fines," *Pacific Daily News*, June 4, 2026, https://www.guampdn.com/news/governor-signs-ban-on-deep-sea-mining-violators-face-50k-fines/article_a2619d2e-c81a-4cf2-973b-821cfe204e12.html.

On March 13, 2026, BOEM completed its Area ID decision memo for the CNMI, identifying the OCS areas that are to undergo environmental review for a potential critical mineral lease sale.[95] As with the Area ID memo for American Samoa, the CNMI Area ID memo identified an area larger than the original RFI area, including a new area located west of the CNMI, for consideration for a potential lease sale.[96] According to the Area ID memo, companies had expressed interest in polymetallic sulfides to the west of the CNMI, in addition to the ferromanganese crusts and polymetallic nodules referenced in the RFI.[97] BOEM stated in its FY2027 budget justification that it anticipates holding a lease sale for the CNMI in November 2026.[98]

Virginia

On November 13, 2025, BOEM received an unsolicited lease sale request from Odyssey Marine Exploration focused on heavy mineral sands and phosphorites offshore of Virginia.[99] According to Odyssey Marine Exploration, these offshore deposits may be rich in titanium, zirconium, phosphate, and REEs (**Table 1**).[100] On June 23, 2026, BOEM published an RFI for a potential mineral lease sale offshore of Virginia in the *Federal Register*.[101] BOEM stated that it had determined the RFI area based on Odyssey Marine Exploration's interest as identified in the unsolicited lease sale request.[102] The RFI area is located 3 to 63.5 miles offshore of the Delmarva Peninsula seaward of Accomack and Northampton counties.[103] BOEM stated in its FY2027 budget justification that it anticipates holding a lease sale for Virginia in 2027.[104]

Alaska

On January 29, 2026, BOEM published an RFI in the *Federal Register* for a lease sale for minerals on the OCS offshore of Alaska.[105] BOEM anticipates that Alaska's OCS contains heavy mineral sand deposits and ferromanganese crusts (see **Table 1**).[106] BOEM stated that the RFI area covers over 113 million acres—an area bigger than the size of California—and spans water depths starting at 10 m to over 7,000 m.[107] The RFI area comprises several locations:[108]

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[95] BOEM, "CNMI Activities."

[96] BOEM, "Area Identification Recommendation for the Commonwealth of Northern Mariana Islands Outer Continental Shelf (OCS) Mineral Leasing Process," March 13, 2026, https://www.boem.gov/sites/default/files/documents/marine-minerals/critical-minerals/Area%20ID%20Memo_CNMI%20OCS%20Minerals_signed.pdf. Hereinafter BOEM, "Area Identification Recommendation for the Commonwealth of Northern Mariana Islands."

[97] BOEM, "Area Identification Recommendation for the Commonwealth of Northern Mariana Islands," p. 4.

[98] DOI, *FY2027 Budget Justification*, p. 35.

[99] BOEM, "RFI for Virginia."

[100] Odyssey Marine Exploration, "Odyssey Marine Exploration Files U.S. Offshore Critical Minerals Lease Sale Request to Advance America's Resource Security," November 7, 2025, https://ir.odysseymarine.com/news/news-details/2025/Odyssey-Marine-Exploration-Files-U-S—Offshore-Critical-Minerals-Lease-Sale-Request-to-Advance-Americas-Resource-Security/default.aspx.

[101] BOEM, "RFI for Virginia."

[102] BOEM, "RFI for Virginia."

[103] BOEM, "RFI for Virginia."

[104] DOI, *FY2027 Budget Justification*, p. 37.

[105] BOEM, "RFI for Alaska."

[106] BOEM, "Critical Minerals on the Alaska OCS," https://www.boem.gov/marine-minerals/critical-minerals/critical-minerals-alaska-ocs.

[107] BOEM, "RFI for Alaska."

[108] BOEM, "RFI for Alaska."

- two nearshore heavy mineral sand deposits, referred to as Norton Sound Heavy Mineral Sands and Goodnews Bay Heavy Mineral Sands;
- an area encompassing the Aleutian Arc, which includes the Aleutian Trench, the deepest area included in the RFI;
- numerous seamounts located in the Gulf of Alaska; and
- two areas located in the Arctic Ocean, referred to as the Canada Basin and Chukchi Borderland.

Approximately 62% of the Canada Basin and 86% of the Chukchi Borderlands occur north of 75°N in the Arctic Ocean.[109] Waters this far north in the Arctic Ocean may present some logistical challenges for U.S. seabed mining companies. In addition, approximately 74% of the Canada Basin and 96% of the Chukchi Borderland occur on U.S. *extended continental shelf*, an area of the seabed that extends beyond the 200-nmi limit of the continental shelf (**Figure 1**). The United States determined the outer limits of its extended continental shelf using rules set forth in the United Nations Convention on the Law of the Sea (UNCLOS), even though the United States is not a party to this international convention.[110] Russian officials have reportedly objected to the United States expanding its OCS as a nonparty to UNCLOS.[111] It is unclear whether issues related to seabed jurisdiction, or logistical challenges of mining in the Arctic Ocean, would affect interest by U.S. companies in a potential lease sale for the Canada Basin and Chukchi Borderland. BOEM's initial 30-day comment period for the RFI ended on March 2, 2026.[112] On March 6, 2026, BOEM announced that the comment period would be extended to April 1, 2026.[113] In its FY2027 budget justification, BOEM stated that it anticipates holding a lease sale for the Alaska Region in December 2026.[114]

Selected Previous Federal Leasing Activities

Historically, competitive commercial lease sales for any types of hard minerals on the OCS have been rare.[115] In 1961, DOI issued six leases for marine phosphate mining on the California

[109] CRS calculated these percentages using the shapefiles for the Alaska RFI areas (available at https://www.boem.gov/regions/alaska-ocs-region/potential-alaska-offshore-minerals-lease-sale) and the Sovereign Limits database (https://sovereignlimits.com/) to determine the extended continental shelf.

[110] Article 76 of the United Nations Convention on the Law of the Sea (UNCLOS; United Nations, *United Nations Convention on the Law of the Sea of 10 December 1982, Overview and Full Text*, https://www.un.org/depts/los/convention_agreements/convention_overview_convention.htm). For more information about the U.S. extended continental shelf, see CRS Report R47912, Outer Limits of the U.S. Extended Continental Shelf: Background and Issues for Congress, by Caitlin Keating-Bitonti.

[111] James Brooke, "Echoing Trump's Offer to Buy Greenland, America Quietly Doubles Its Claim to Arctic Seabed," *New York Sun,* January 4, 2024, https://www.nysun.com/article/echoing-trumps-offer-to-buy-greenland-america-quietly-doubles-its-claim-to-arctic-seabed; and Mike Eckel et al., "Under Sea, Under Stone: How the U.S. Claimed Vast New Arctic Territory—In An Unusual Way," *Radio Free Europe/Radio Liberty*, https://www.rferl.org/a/arctic-sea-claims-interactive-map/32793427.html.

[112] BOEM, "RFI for Alaska."

[113] BOEM, "BOEM Extends Public Comment Period on Request for Information and Interest on Potential Minerals Lease Sale Offshore Alaska," note to stakeholders, March 6, 2026, https://www.boem.gov/newsroom/notes-stakeholders/boem-extends-public-comment-period-request-information-and-interest-0 (hereinafter BOEM note to stakeholders, March 6, 2026).

[114] DOI, *FY2027 Budget Justification*, p. 35.

[115] BOEM has negotiated multiple noncompetitive agreements for the use of OCS sand, gravel, and shell resources in coastal restoration, beach nourishment, and construction projects, under regulations at 30 C.F.R. Part 583.

OCS.[116] These six leases were terminated following the "discovery of unexploded naval missiles on the ocean floor."[117] In 1991, the Minerals Management Service, BOEM's predecessor agency, offered a marine mineral lease sale for gold and associated minerals in placer deposits in Alaska's Norton Sound, offshore of Nome.[118] No bids were received by the bid deadline, and no sale occurred.[119] Gold is not included on the USGS's 2025 list of 60 critical minerals, although it still falls under BOEM's hard mineral leasing regulations.[120]

Critical Mineral Research and Evaluation Activities on the Outer Continental Shelf

In addition to administering the marine mineral leasing program for the OCS, BOEM has the responsibility to evaluate the OCS for marine mineral resources. BOEM, NOAA, and USGS have collaborated on multiple initiatives to determine which areas of the OCS have potential for critical minerals.[121]

National Offshore Critical Minerals Inventory

BOEM's Marine Minerals Program is developing a National Offshore Critical Minerals Inventory (NOCMI). The NOCMI aims to "locate and assess deposits" of offshore critical minerals for U.S. economic and national security.[122] BOEM collaborates with NOAA and USGS to fund, plan, and conduct research relevant to the NOCMI, including collecting data about habitats, environmental conditions, and offshore geology.[123] BOEM identifies five strategic priorities under the NOCMI.[124]

- Advance resource evaluation and environmental assessment standards and information assets
- Advance assessment of offshore critical minerals
- Advance understanding of baseline environmental conditions

[116] USGS, *Mineral Resource Management of the Outer Continental Shelf*, Geological Survey Circular 720, 1975, p. 3; and DOI, Minerals Management Service (MMS), *Federal Offshore Statistics: 1995*, OCS Report MMS 97-0007, 1997, p. 6.

[117] DOI, MMS, *Federal Offshore Statistics: 1995*, OCS Report MMS 97-0007, 1997, p. 6.

[118] Anthony C. Giordano, "A Case Study of the Norton Sound Alaska Marine Mineral Lease Sale Process," in *Proceedings of the 1991 Exclusive Economic Zone Symposium on Mapping and Research: Working Together in the Pacific EEZ*, eds. Millington Lockwood and Bonnie A. McGregor (Portland, OR: United States Government Printing Office, 1992), pp. 72-76.

[119] Anthony C. Giordano, "A Case Study of the Norton Sound Alaska Marine Mineral Lease Sale Process." According to one analysis, industry indicated that "low gold prices, limited availability of mining vessels, lowest point of price curve swing, difficulty in obtaining capital financing, better opportunities in State waters, and legal uncertainty" contributed to the lack of bids.

[120] USGS, "2025 List of Critical Minerals." 30 C.F.R. Part 581 provides for the leasing of minerals other than oil, gas, and sulfur on the OCS. Also see BOEM, "Competitive Leasing of OCS Marine Minerals," https://www.boem.gov/marine-minerals/obtaining-marine-minerals/competitive-leasing-ocs-marine-minerals.

[121] BOEM and USGS, "America's Offshore Critical Mineral Resources," p. 6.

[122] BOEM, "Offshore Critical Minerals."

[123] BOEM, "Offshore Critical Minerals"; BOEM, *Budget Justification and Performance Information Fiscal Year 2025*, p. 93; and BOEM and USGS, "America's Offshore Critical Mineral Resources," pp. 1-2.

[124] BOEM, "Not Just Nodules," slide 15.

- Advance technologies that efficiently and cost-effectively assess offshore critical minerals
- Provide accessible information on OCS critical minerals

Additionally, several federal agencies, including BOEM, NOAA, and USGS, are coordinating research efforts and resources to achieve the goals outlined in the *National Strategy for Ocean Mapping, Exploring, and Characterizing the United States Exclusive Economic Zone* (NOMEC Strategy).[125] The interagency National Ocean Mapping, Exploration, and Characterization (NOMEC) Council released the Implementation Plan for the NOMEC Strategy in 2021 pursuant to a 2019 presidential memorandum.[126] Among the NOMEC Strategy's goals are to completely map the U.S. seafloor and to "explore and characterize priority areas," such as areas with potential for critical minerals.[127] In 2024, the NOMEC Council updated the NOMEC Implementation Plan to include the U.S. extended continental shelf, over which the United States claims jurisdiction (i.e., areas of the seabed beyond the 200 nmi limit of the EEZ).[128]

Evaluation of Outer Continental Shelf Areas with Potential for Critical Minerals

On February 3, 2025, Secretary of the Interior Doug Burgum issued DOI Secretarial Order 3418, which aims to "improve energy and critical minerals identification," among other goals, and directs DOI officials to "prioritize efforts to accelerate the ongoing, detailed geologic mapping of the United States, with a focus on locating previously unknown deposits of critical minerals."[129] BOEM has funded several offshore critical mineral assessment projects on the OCS.[130] BOEM stated in its FY2026 budget justification that it will conduct critical mineral resource assessment

[125] Ocean Policy Committee (OPC), Ocean Science and Technology Subcommittee, *National Strategy for Mapping, Exploring, and Characterizing the United States Exclusive Economic Zone*, June 9, 2020. The U.S. exclusive economic zone is the ocean area located generally between 3 and 200 nmi from the shoreline (White House, "Proclamation 5030: Exclusive Economic Zone of the United States of America," 48 *Federal Register* 10605, March 10, 1983). For more information about U.S. ocean and coastal mapping efforts, see CRS Report R47623, *Frequently Asked Questions: Mapping of U.S. Ocean and Coastal Waters*, coordinated by Caitlin Keating-Bitonti.

[126] OPC, Ocean Science and Technology Subcommittee, National Ocean Mapping, Exploration, and Characterization (NOMEC) Council, *Implementation Plan for the National Strategy for Ocean Mapping, Exploring, and Characterizing the United States Exclusive Economic Zone*, January 2021 (hereinafter NOMEC Council, *Implementation Plan*); and White House, "Ocean Mapping of the United States Exclusive Economic Zone and the Shoreline and Nearshore of Alaska," presidential memorandum of November 19, 2019, 84 *Federal Register* 64699, November 22, 2019. The NOMEC Council reports to the Ocean Science and Technology Subcommittee of the Ocean Policy Committee, an interagency body that helps guide federal ocean policy. The Ocean Policy Committee was established in 2018 through E.O. 13840 of June 19, 2018, "Ocean Policy to Advance the Economic, Security, and Environmental Interests of the United States," 83 *Federal Register* 29431, June 22, 2108, and codified by the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (P.L. 116-283), Title X, Subtitle E.

[127] NOMEC Council, *Implementation Plan*, pp. 15-16.

[128] Ocean Policy Committee, OST, NOMEC Council, *2024 Implementation Plan Update for the National Strategy for Ocean Mapping, Exploring, and Characterizing the United States Exclusive Economic Zone*, December 2024, p. 2. Also see Department of State, "Continental Shelf and Maritime Boundaries; Notice of Limits," 88 *Federal Register* 88470, December 21, 2023.

[129] DOI Secretarial Order 3418, "Unleashing American Energy," February 3, 2025, https://www.doi.gov/document-library/secretary-order/so-3418-unleashing-american-energy.

[130] For example, see BOEM, "Marine Mineral Resource Evaluation Studies," https://www.boem.gov/marine-minerals/marine-mineral-research-studies/marine-mineral-resource-evaluation-studies.

and environmental characterization work in the Atlantic, Alaska, Pacific, and Gulf of America regions as part of the NOCMI.[131]

In the Atlantic, BOEM and USGS have previously stated that they have plans to investigate critical mineral resources north of Puerto Rico within U.S. jurisdiction.[132] Previous seafloor mapping and sediment core data indicate the presence of polymetallic nodules in the region north of the Puerto Rico Trench.[133] BOEM also has participated in federally funded studies to investigate a nodule field located on the Blake Plateau off the state of Georgia (**Figure 1**).[134] However, federal studies of the Blake Plateau nodule field have focused on ecosystem recovery post-seabed disturbance, not the potential for critical minerals within the nodule field.[135] In the 1970s, a private company conducted an experimental seabed mining pilot project on the Blake Plateau to test the nodule collecting capability of its mining machinery.[136] In 1982, USGS visited the pilot project's site to mark the area for future studies.[137] BOEM, NOAA, and USGS have returned to this site several times over the past five years to study the potential long-term environmental impacts of seabed mining.[138]

Offshore of Alaska, BOEM scientists have worked to understand the location and quantities of critical minerals on Alaska's OCS for potential future development.[139] BOEM, NOAA, and USGS have an ongoing study through FY2027 to investigate the western Aleutian Islands for hydrothermal deposits with potential for critical minerals.[140] Between June 15 and July 2, 2025, these three agencies explored hydrothermal vents and seamounts around the Aleutian Islands and gathered data on offshore critical minerals and deep-sea ecosystems.[141]

In the Pacific, BOEM's critical mineral resource assessment and environmental characterization work has included sites located in the Escanaba Trough, offshore of California (**Figure 1**), and offshore areas around Hawaii and the U.S. Pacific Island territories.[142] BOEM, NOAA, and

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[131] BOEM, *Budget Justifications and Performance Information Fiscal Year 2026*, p. 20. Executive Order 14172, "Restoring Names That Honor American Greatness," issued on January 31, 2025, directed the renaming of the Gulf of Mexico to the Gulf of America for U.S. federal use; other countries may continue to refer to the water body as the Gulf of Mexico.

[132] BOEM, *Budget Justifications and Performance Information Fiscal Year 2025*, p. 93.

[133] Kathryn M. Scanlon and Douglas G. Masson, "Fe-Mn Nodule Field Indicated by GLORIA, North of the Puerto Rico Trench," *Geo-Marine Letters*, vol. 12 (1992), pp. 208-213.

[134] BOEM, "Scientists Explore Site of Historic Seabed Mining Equipment Testing Offshore Georgia," December 20, 2022, https://www.boem.gov/newsroom/ocean-science-news/scientists-explore-site-historic-seabed-mining-equipment-testing (hereinafter BOEM, "Scientists Explore Site of Historic Seabed Mining").

[135] NOAA, "Investigation of a Historic Seabed Mining Equipment Test Site on the Blake Plateau," https://oceanexplorer.noaa.gov/explorations/22seabed-mining/welcome.html (hereinafter NOAA, "Investigation of a Historic Seabed Mining Equipment Test Site on the Blake Plateau").

[136] NOAA, "Investigation of a Historic Seabed Mining Equipment Test Site on the Blake Plateau."

[137] NOAA, "Searching for Historic Deep-Sea Mining Impacts on the Blake Plateau," November 7, 2019, https://oceanexplorer.noaa.gov/okeanos/explorations/ex1907/logs/nov7/nov7.html (hereinafter NOAA, "Searching for Historic Deep-Sea Mining Impacts on the Blake Plateau").

[138] BOEM, "Scientists Explore Site of Historic Seabed Mining."

[139] BOEM, "Critical Minerals on the Alaska OCS," https://www.boem.gov/marine-minerals/critical-minerals/critical-minerals-alaska-ocs.

[140] BOEM, "Seamount Benthic Mapping and Characterization for Deep-Sea Corals, Benthic Ecosystems, and Critical Minerals of the Aleutian Islands," MM-21-04, https://www.boem.gov/sites/default/files/documents/environment/environmental-studies/MM-21-04_3.pdf.

[141] BOEM, "Into the Unknown: BOEM Dives Deep to Explore Offshore Mineral Frontiers," July 22, 2025, https://www.boem.gov/newsroom/ocean-science-news/unknown.

[142] BOEM, "Not Just Nodules," slide 16.

USGS first explored polymetallic sulfide deposits in the Escanaba Trough in the early 1980s,[143] and they continued to research this area offshore of Northern California during a 2022 expedition.[144] In FY2022, BOEM, NOAA, and USGS used seafloor mapping technologies to investigate polymetallic nodule potential offshore of Hawaii.[145] BOEM also has co-funded studies to explore U.S. Pacific Island territorial areas for offshore resources, including American Samoa, Guam and the CNMI, and Palmyra Atoll and Kingman Reef (see **Figure 1**).[146] In 2025, BOEM, NOAA, and USGS partnered with the Ocean Exploration Corporative Institution, based at the University of Rhode Island's Graduate School of Oceanography, for a three-week expedition to deploy an Orpheus Ocean autonomous underwater vehicle to explore U.S. waters around Guam and the CNMI.[147] The expedition identified polymetallic nodules in the Mariana Trench.[148] In addition, between February and April 2026, NOAA, along with partners, mapped and characterized over 30,000 square nmi of the OCS offshore of American Samoa, focusing on priority areas identified by BOEM.[149] The mapping project also included the collection of box core samples that had retrieved polymetallic nodules.

In the Gulf of America, BOEM previously had stated that it would "kick-start a multi-year study to examine the critical mineral potential of submerged salt brine pools that will extend into 2025 and beyond."[150] The agency has listed mapping brine pools in the Gulf of America among its current activities on its webpage.[151]

Critical Minerals Environmental Assessment Framework

BOEM has asserted that information about baseline conditions of offshore environments with potential for critical minerals is "sparse."[152] BOEM, in collaboration with the National Academies of Sciences, Engineering, and Medicine (NASEM), has been developing *environmental baseline* information acquisition and assessment standards for critical mineral-related activities on the OCS.[153] Such baseline data could facilitate BOEM's evaluation of future requests for lease sales

[143] In the FY2025 budget justification, BOEM uses the term *massive sulfide deposits*, which is another term for polymetallic sulfide deposits. BOEM, *Budget Justifications and Performance Information Fiscal Year 2025*, p. 93.

[144] USGS, "USGS Leads Research Expedition to Deep-Sea Escanaba Trough," May 19, 2022, https://www.usgs.gov/centers/pcmsc/news/usgs-leads-research-expedition-deep-sea-escanaba-trough.

[145] BOEM, *Budget Justifications and Performance Information Fiscal Year 2025*, p. 94.

[146] BOEM, "Critical Minerals on the Pacific OCS," https://www.boem.gov/marine-minerals/critical-minerals/critical-minerals-pacific-ocs.

[147] Orpheus Ocean, "News: Orpheus Ocean Advances Deep Sea Research in the Mariana Islands."

[148] Hanlon, "Autonomous Vehicle's Search in Mariana Trench."

[149] NOAA, "2026 American Samoa Mapping: NV5 Contract Work: Box Core Photos," https://oceanexplorer.noaa.gov/mineral-samples/2026-nv5-american-samoa/.

[150] BOEM, *Budget Justifications and Performance Information Fiscal Year 2025*, p. 93.

[151] BOEM, "America's Offshore Critical Minerals," https://www.boem.gov/factsheet/americas-offshore-critical-minerals.

[152] BOEM, *Developing a CMEAF for Critical Mineral Activities*, p. 1.

[153] Knowledge of the environmental baseline condition of a proposed site for seabed mining can be used to forecast the effects of mining activities or evaluate impacts to the marine environment. BOEM, *Budget Justifications and Performance Information Fiscal Year 2025*, p. 93. In 2015, BOEM and NASEM established a committee to assist BOEM in "its efforts to manage development of the nation's offshore energy resources in an environmental and economically responsible way." NASEM, "Standing Committee on Environmental Science and Assessment for Ocean Energy Management," https://www.nationalacademies.org/our-work/standing-committee-on-environmental-science-and-assessment-for-ocean-energy-management.

(see further discussion below under "Mineral Leasing on the U.S. Outer Continental Shelf"). Specific research questions to be addressed by BOEM and NASEM include the following:

- What is the baseline environment associated with deep sea critical mineral resources?
- What are the potential impacts associated with deep sea critical mineral prospecting and operations activities?
- What are potential mitigations that can be applied to deep sea critical mineral prospecting and operations activities?[154]

BOEM and NASEM have stated they will engage with affiliated academic partners to develop environmental recommendations and solicit information from stakeholders related to environmental assessment of offshore critical mineral activities.[155]

Issues for Congress

As the United States works to strengthen its domestic critical mineral supply chain, Congress may consider BOEM's role in evaluating areas of the OCS and leasing submerged lands for critical minerals, as well as the potential roles of other federal agencies. In particular, Congress could evaluate whether BOEM's efforts to implement E.O. 14285 align with congressional priorities. Among its directives, E.O. 14285 directed the Secretary of the Interior to "establish an expedited process for reviewing and approving permits for prospecting and granting leases for exploration, development, and production of seabed mineral resources" within the OCS. Some Members have introduced legislation in the 119th Congress that would codify E.O. 14285 (e.g., H.R. 3803) or would mandate that certain federal departments and agencies act on aspects of the executive order (e.g., H.R. 4018, S. 2860). The sections below examine six potential issues for Congress:

1. State and territorial input in BOEM's marine mineral leasing process
2. Allocation of federal revenues from OCS mineral leasing
3. BOEM's regulatory framework for marine mineral prospecting
4. Onshore processing of marine minerals
5. Potential interpretations by U.S. Customs and Border Protection (CBP) of certain U.S. statutes for vessels engaging in seabed mining activities on the OCS
6. Potential marine environmental impacts of seabed mining

Role of States and Territories in BOEM Leasing

BOEM's marine mineral leasing regulations provide opportunities for states and territories to give input on leasing decisions.[156] For example, state and territorial governments, along with other interested parties, may respond to an RFI regarding potential leasing for a given area, and BOEM may form joint task forces to coordinate and consult with states and territories prior to offering a lease sale.[157] When BOEM decides to hold a lease sale, the proposed leasing notice must be

[154] BOEM, *Developing a CMEAF for Critical Mineral Activities*, p. 3.

[155] BOEM, *Developing a CMEAF for Critical Mineral Activities*, p. 3. Stakeholder groups would include nongovernmental organizations, environmental groups, industry, tribes, and other Indigenous groups.

[156] BOEM's regulations at 30 C.F.R. Parts 580-582 refer to "states." OCSLA at 43 U.S.C. §1331(r) defines the term "state" to include the Commonwealth of Puerto Rico, Guam, American Samoa, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands.

[157] 30 C.F.R. §§581.12-581.13.

submitted to adjacent state or territorial governors, and the Secretary of the Interior must consider and respond to any written comments submitted by a governor within 60 days of the notice's publication.[158] After a lease is awarded, BOEM must provide opportunities for adjacent states or territories to comment on the lessee's delineation, testing, and mining plans and must respond to any comments.[159] Separately, coastal states and territories also can review certain federal agency actions in offshore areas under the Coastal Zone Management Act (16 U.S.C. §§1451-1466).[160]

Some industry stakeholders have expressed that the multiple public consultation periods in BOEM's regulations could contribute to delays in critical mineral development and have sought a more streamlined process with regard to consultations with states and territories and public input.[161] Some of BOEM's regulatory steps involving state and territorial consultation are discretionary—BOEM or the Secretary of the Interior "may" engage in these steps, but they are not required to do so under the regulations. In its press release of June 25, 2025, DOI announced that it would opt not to take some of these discretionary steps, particularly those at the early stages of deciding whether to hold a lease sale (issuing an RFI and setting up a joint task force), in order to speed up the leasing process.[162] DOI estimated that these changes could save "anywhere from two months to more than a year" during the lease planning stages.[163]

Notwithstanding the DOI announcement, BOEM did issue RFIs for the potential lease sales under consideration for American Samoa, the CNMI, Virginia, and Alaska; and BOEM extended the comment periods for some RFIs in response to requests.[164] In response to DOI's June announcement of an expedited process for review of critical mineral activities on the OCS, Delegate Moylan (Guam) reportedly stated that "accelerated timelines can unintentionally—or intentionally—sideline communities that already face structural barriers to participation."[165] He proposed "formalized consultation protocols that require territorial consent, not just comment periods" for federal projects that may impact U.S. territorial islands, including their waters and communities.[166] Congress could consider whether to weigh in on state and territorial input in the critical mineral leasing process through oversight or legislation, or it could continue the current

[158] 30 C.F.R. §581.16.

[159] 30 C.F.R. §582.4.

[160] For more information, see CRS Report R45460, *Coastal Zone Management Act (CZMA): Overview and Issues for Congress*, by Eva Lipiec.

[161] *Exploring the Potential of Deep-Sea Mining to Expand American Mineral Production*, hearing.

[162] DOI, "Interior Streamlines Offshore Mineral Policies."

[163] DOI, "Interior Streamlines Offshore Mineral Policies."

[164] BOEM, "American Samoa Activities"; BOEM, "Virginia Mineral Activities"; BOEM, "CNMI Activities"; BOEM, "Potential Alaska Offshore Minerals Lease Sale." The governors of CNMI and Guam submitted a joint request to BOEM to extend the RFI comment period for the CNMI activities by an additional 120 days. See footnote 90. Also see BOEM note to stakeholders, March 6, 2026, which extended the comment period on the RFI for the potential Alaska mineral lease sale.

[165] Walter Ulloa, "Delegate Demanding Territorial Consent Before Seabed Mining," *Guam Daily Post*, August 13, 2025, https://www.postguam.com/news/local/delegate-demanding-territorial-consent-before-seabed-mining/article_9394a808-cf37-4a98-bfea-131b792b0267.html (hereinafter Ulloa, "Delegate Demanding Territorial Consent Before Seabed Mining").

[166] Ulloa, "Delegate Demanding Territorial Consent Before Seabed Mining." Discussion of political status issues concerning U.S. territories is beyond the scope of this report. For additional discussion of territorial political status, see, for example, CRS In Focus IF11792, *Statehood Process and Political Status of U.S. Territories: Brief Policy Background*, by R. Sam Garrett.

framework in which BOEM's existing statutory and regulatory authorities govern consultation with states and territories.[167]

Allocation of Federal Revenues from OCS Mineral Leasing

Leasing the OCS for marine mineral development would generate revenue for the federal government. If BOEM holds a competitive lease sale, the winning bidder would pay the bid amount (known as a *bonus*) to the government.[168] Lessees also must pay annual *rental* fees, generally starting five years after the lease award and continuing until OCS minerals are produced.[169] Additionally, lessees must pay *royalties* on produced OCS minerals, consisting of a percentage of the value or amount of minerals produced, or another formula as prescribed in the lease sale notice.[170] (Because BOEM has not held a lease sale for OCS critical minerals, it is unclear what the exact royalty terms would be or how much revenue would be realized from OCS mineral leasing.) In June 2025, BOEM announced that it would take steps to "provide greater certainty for industry" through "offer[ing] favorable lease terms, including lower minimum bids and waivers for some rental fees."[171] Some industry stakeholders have expressed support for these BOEM efforts.[172]

Under the OCSLA, DOI must share with coastal states and territories 27% of any revenue from OCS leases within 3 nmi of the seaward boundary of any coastal state or territory.[173] Other than this revenue sharing (sometimes termed *8(g) revenue sharing* because the provisions appear in Section 8(g) of the OCSLA), all revenues from OCS marine mineral leasing would be deposited in the U.S. Treasury as miscellaneous receipts.[174] For the proposed sales for American Samoa and the CNMI, this effectively means that all the revenue would be deposited in the Treasury, since the identified sale areas are farther than 3 nmi from these territories' seaward boundaries. Proposed sale areas for Alaska and Virginia have not yet been identified.

Some stakeholders contend that coastal states and territories should receive a share of federal revenues from critical mineral lease sales throughout the OCS, since they could experience environmental impacts and disruptions of traditional ocean economic activities from seabed mining.[175] Some seek to institute legislative provisions for OCS seabed mining that would be similar to provisions for offshore oil and gas leasing in the Gulf of America, which provide for Gulf coast states to receive a share of revenues from deeper-water leases beyond the 3-nmi limit

[167] For example, provisions of the OCSLA at 43 U.S.C. §1344, which are specific to oil and gas leasing, address state input when scheduling oil and gas lease sales. For more information, see CRS Report R44504, *Five-Year Offshore Oil and Gas Leasing Program: History and Background*, by Laura B. Comay and Adam Vann.

[168] On bidding systems for competitive mineral lease auctions, see BOEM regulations at 30 C.F.R. §581.18-§581.26.

[169] 30 C.F.R. §581.27. BOEM defines *produced* in this context to mean "sold, transferred, used, or otherwise disposed of" (30 C.F.R. §581.28).

[170] 30 C.F.R. §581.28.

[171] DOI, "Interior Streamlines Offshore Mineral Policies."

[172] For example, Impossible Metals, "U.S. Accelerates Offshore Critical Minerals Development," June 27, 2025.

[173] 43 U.S.C. §1337(g).

[174] 43 U.S.C. §1338.

[175] For example, in her comments on the proposed CNMI lease sale, the governor of Guam requested that if BOEM moved forward with leasing, it should work with both Guam and the CNMI "to ensure that we received our fair share of any economic value generated from leasing in our offshore area," given that "[t]he history of extractive industries in island regions shows that profits accrue to corporations while environmental harms remain local." Comments by Lourdes A. Leon Guerrero, Governor of Guam, on CNMI RFI, January 9, 2026, at Regulations.gov, https://www.regulations.gov/comment/BOEM-2025-0351-0981.

of 8(g) revenue sharing.[176] Others may argue that any such revenues should remain in the Treasury—for instance, to address the federal deficit—or should be used for other federal purposes rather than shared with states and territories.

Preferential Rights to Lease Critical Mineral Prospecting Areas

BOEM's critical mineral leasing regulations require that a developer obtain a permit to explore (prospect) in any unleased areas, but this permit does not convey the preferential right to lease the prospecting area (see "Mineral Leasing on the U.S. Outer Continental Shelf," above).[177] In this respect, BOEM's regulatory framework differs from that of the International Seabed Authority (ISA) for seabed mining activities in waters beyond national jurisdiction, in that the ISA gives "preference and priority" to prospectors (holders of "exploration" contracts) when awarding seabed mining ("exploitation") contracts.[178] Also, on January 21, 2026, NOAA issued a final rule revising regulations for seabed mining in areas beyond national jurisdiction.[179] The final rule established a consolidated license and permit process whereby eligible applicants can apply for and obtain, at the same time, both an exploration license and a commercial recovery permit. Under the consolidated process,

> The Administrator may issue the exploration license and commercial recovery permit at the same time, thereby confirming the priority of right required that would otherwise be established through the licensing process and the ability of the permit holder to proceed to commercial recovery.... That priority of right continues through the commercial recovery permit. The length of the terms for an exploration license (10 years) and commercial recovery permit (20 years) does not change nor does the ability to extend these terms as described in the regulations and the [Deep Seabed Hard Mineral Resources] Act. Once the Administrator issues the license and permit under the consolidated process, the applicant may immediately proceed to commercial recovery of hard mineral resources, if it wishes, but in any event must begin to diligently pursue its commercial recovery plan.

BOEM has previously suggested that some mining companies could be dissuaded from engaging in prospecting on the OCS by the current regulatory structure, in which a company could conduct

[176] For example, see questioning from Delegate Aumua Amata Coleman Radewagen (American Samoa) in U.S. Congress, House Committee on Natural Resources, Subcommittee on Energy and Mineral Resources, *Deep Dive: Examining the Regulatory and Statutory Barriers to Deep Seabed Mining*, hearing, 119th Cong., 2nd sess., January 22, 2026 (hereinafter *Deep Dive: Examining the Regulatory and Statutory Barriers to Deep Seabed Mining*, hearing). In response to questioning, Oliver Gunasekara, then-CEO and cofounder, Impossible Metals, stated that the company encourages the federal government to share revenues and lease fees with coastal communities, similar to the arrangement in the Gulf of America for offshore oil and gas development, and that the company would voluntarily commit 1% of profit to American Samoa. Also see Impossible Metals, "Smart Stewardship: Extending State/Territory Revenue-Sharing to Marine Minerals," August 28, 2025. For more on Gulf oil and gas revenue sharing, see CRS Report R46195, *Gulf of Mexico Energy Security Act (GOMESA): Background and Current Issues*, by Laura B. Comay.

[177] BOEM and USGS, "America's Offshore Critical Mineral Resources," p. 5. An exception to the permit requirement would be for prospecting conducted by an existing leaseholder in an already leased area.

[178] The ISA is an autonomous international organization that regulates parties to UNCLOS conducting mineral-related activities in areas beyond national jurisdiction. Article 10 of the Annex to UNCLOS states that an operator that holds an ISA-issued exploration contract "shall have a preference and a priority among applicants for a plan of work covering exploitation of the same area and resources." See United Nations, *United Nations Convention on the Law of the Sea of 10 December 1982, Overview and Full Text*, https://www.un.org/depts/los/convention_agreements/convention_overview_convention.htm; and Regulation 24 in ISA, *Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters*, ISBA/19/C/17, July 22, 2013. The United States is not a party to UNCLOS and is not a member of the ISA.

[179] NOAA, "Deep Seabed Mining: Revisions to Regulations for Exploration License and Commercial Recovery Permit Applications," 91 *Federal Register* 2642, January 21, 2026.

assessments and environmental studies as part of a prospecting permit but then lose its bid to lease the prospecting area.[180] Congress could consider whether to direct BOEM to give prospecting companies preferential rights to lease the prospecting area, similar to the ISA procedure and to NOAA's revisions to its regulations for seabed mining activities in areas beyond national jurisdiction. Such a change in BOEM's regulations for critical mineral leasing could encourage U.S. mining companies to seek prospecting permits, thereby contributing to federal data on the location of OCS critical minerals and increasing the chances that the mining companies would subsequently obtain a lease and produce critical minerals.[181] However, since prospecting permits may be awarded noncompetitively under current regulations,[182] granting a prospecting entity preferential right to a lease could be seen by some to favor certain companies over others. Such a change also could reduce revenues that the federal government would receive from a competitive lease auction.

Onshore Processing of Marine Minerals

Once seabed resources are extracted, the material would need to be transported to an onshore facility to be processed for certain minerals. A potentially relevant consideration for Congress is that the United States currently "lacks domestic processing and manufacturing capabilities for some critical minerals."[183] Because commercial-scale seabed mining for critical minerals has yet to occur on the OCS (or in international waters), there are no existing facilities for processing and refining seabed materials.[184] Some experts contend that certain international facilities, including those located in Indonesia, South Korea, Japan, and Colombia, could be modified to process seabed materials.[185] However, some of these facilities may be associated with terrestrial mines and may not have the capacity to process seabed minerals.[186] One facility in Japan has evaluated polymetallic nodules for processing and refining purposes.[187] Until the United States has

[180] BOEM and USGS, "America's Offshore Critical Mineral Resources," p. 5.

[181] Under BOEM regulations at 30 C.F.R. Part 580, Subpart D, prospectors must submit geological data and information they collect to BOEM. Some types of data and information are protected from public disclosure for specified time periods.

[182] 30 C.F.R. Part 580, Subpart B.

[183] U.S. Department of Commerce, *A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals*, June 4, 2019, https://www.commerce.gov/sites/default/files/2020-01/Critical_Minerals_Strategy_Final.pdf.

[184] Zohan Hasan Tariq and Tom LaTourrette, "The Missing Piece: Minerals Processing and Deep Sea Mining," RAND, September 18, 2025, https://www.rand.org/pubs/commentary/2025/09/the-missing-piece-minerals-processing-and-deep-sea.html (hereinafter Tariq and LaTourrette, "The Missing Piece"); and Michael Barnard and Lyle Trytten, *A Techno-Economic Assessment of Seabed Mining: American Samoa and Global Implications*, August 2025, p. 17, https://drive.google.com/file/d/1RettUw5s1sn0rHeyDDj6VzcBcimieY9e/view (hereinafter Barnard and Trytten, *A Techno-Economic Assessment of Seabed Mining*).

[185] Barnard and Trytten, *A Techno-Economic Assessment of Seabed Mining*, p. 17; and Rifat Jabbar et al., *Polymetallic Nodules and the Critical Minerals Supply Chain: A North American Approach*, Hatch and the Wilson Center, p. 7 (hereinafter Jabbar et al., *Polymetallic Nodules and the Critical Minerals Supply Chain*).

[186] Jabbar et al., *Polymetallic Nodules and the Critical Minerals Supply Chain*, p. 8.

[187] The Metals Company (TMC), "World First: TMC and PAMCO Achieve Breakthrough in Commercial-Scale Processing of Polymetallic Nodules, Successfully Producing Calcine," press release, September 9, 2024, https://investors.metals.co/news-releases/news-release-details/world-first-tmc-and-pamco-achieve-breakthrough-commercial-scale; TMC, "World First: TMC and PAMCO Achieve a New Nodule Processing Milestone, Unlocking Critical Energy & Steelmaking Materials at Existing Facilities," press release, February 18, 2025, https://investors.metals.co/news-releases/news-release-details/world-first-tmc-and-pamco-achieve-new-nodule-processing; and remarks of Gerard Barron, Chairman and CEO, TMC, in *Deep Dive: Examining the Regulatory and Statutory Barriers to Deep Seabed Mining*, hearing.

domestic processing and refining capabilities, some U.S. seabed mining companies have proposed that seabed minerals they harvest could be processed in "friendly nations."[188]

Some Members have introduced legislation in the 119th Congress that would direct the Secretary of Energy to establish a pilot program to support the processing of not fewer than three different types of critical materials, which could include seabed deposits with critical minerals (S. 596).[189] Attempts to establish processing facilities in the United States have "encountered challenges such as lengthy permitting timelines, competition for feedstock, lack of price competitiveness against global competitors, and low investor interest due to market volatility," according to some experts.[190] A processing facility for seabed minerals in the United States would likely have to be constructed in a state with a deepwater port.[191] Some stakeholders have speculated whether deepwater ports located in California, Oregon, and Washington would be "receptive to storage and processing of seabed nodules," because each of these states has a ban on seabed mining within their respective state waters, as previously discussed.[192] Texas, Louisiana, and North Carolina also have been considered for potential sites for processing critical minerals from polymetallic nodules.[193] In 2023, some Members of Congress reportedly expressed support for proposals for a Texas processing facility.[194] In July 2025, Impossible Metals and ReElement Technologies Corporation, a subsidiary of American Resources Corporation, signed a memorandum of understanding that describes how ReElement would use its refining capabilities to deliver copper, cobalt, nickel, manganese, and REEs from polymetallic nodules.[195] ReElement has facilities in Indiana.[196] Use of a processing facility not located in a coastal state could incur additional costs and logistical constraints.[197]

During an April 2025 hearing of the House Committee on Natural Resources' Subcommittee on Oversight and Investigations, the then-CEO for Impossible Metals stated that if the United States builds stockpiles of polymetallic nodules "in strategic locations in the [United States] where there is the infrastructure and the power, it will encourage industry to invest in building" domestic processing and refining facilities.[198] The then-CEO of the company reiterated this point in a 2026

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[188] Remarks of Oliver Gunasekara, then-CEO and cofounder, Impossible Metals, in *Deep Dive: Examining the Regulatory and Statutory Barriers to Deep Seabed Mining*, hearing.

[189] In the 118th Congress, H.R. 7636 would have instructed the President to direct certain federal departments to "coordinate and expedite across Federal agencies the development of infrastructure to process and refine seafloor [polymetallic] nodules within the United States."

[190] Tariq and LaTourrette, "The Missing Piece."

[191] Barnard and Trytten, *A Techno-Economic Assessment of Seabed Mining*, p. 17; and Jabbar et al., *Polymetallic Nodules and the Critical Minerals Supply Chain*, p. 11.

[192] Barnard and Trytten, *A Techno-Economic Assessment of Seabed Mining*, p. 17. See footnote 42.

[193] Barnard and Trytten, *A Techno-Economic Assessment of Seabed Mining*, p. 17; Jabbar et al., *Polymetallic Nodules and the Critical Minerals Supply Chain*, p. 12; TMC, *The Metals Company: Capital Light Strategy for Allied Processing of Polymetallic Nodules*, June 2024, p. 8 (hereinafter TMC, *Strategy for Allied Processing of Polymetallic Nodules*); and Glomar Minerals, "Glomar Minerals and Cobalt Blue Advance Four Sites Across Three States for the United States' First Polymetallic Nodule Processing Facility," June 15, 2026, https://glomarminerals.com/glomar-minerals-and-cobalt-blue-advance-four-sites-across-three-states-for-the-united-states-first-polymetallic-nodule-processing-facility/.

[194] James Osborne, "Texas Congressmen Angling to Have Deep-Sea Mined Minerals Refined on the Gulf Coast," *Houston Chronicle*, December 13, 2023, https://www.houstonchronicle.com/business/energy/article/deep-sea-minerals-gulf-coast-refinery-18540332.php; and TMC, *Strategy for Allied Processing of Polymetallic Nodules*, p. 10.

[195] Impossible Metals, "ReElement Technologies Corporation and Impossible Metals Announce Collaboration on First U.S. Deep Sea Nodule Refinement Program," July 21, 2025.

[196] ReElement, "Facilities," https://www.reelementtech.com/facilities.

[197] For example, Barnard and Trytten, *A Techno-Economic Assessment of Seabed Mining*, p. 17.

[198] *Exploring the Potential of Deep-Sea Mining to Expand American Mineral Production*, hearing.

hearing of the House Committee on Natural Resources' Subcommittee on Energy and Mineral Resources.[199] Other stakeholders have countered that nodules should not be mined until there is sufficient refining capacity.[200]

Jones Act and Dredge Act Applicability to Critical Mineral Leasing[201]

The Jones Act (Section 27 of the Merchant Marine Act of 1920; P.L. 66-261) requires that waterborne transportation between "U.S. points" be conducted only by vessels built in the United States and owned and crewed by U.S. citizens.[202] The same requirement applies to dredging vessels under the Dredge Act of 1906 (P.L. 59-185). The Jones Act is applicable to U.S. states and Puerto Rico, but not to the U.S. Virgin Islands or U.S. territories and possessions in the Pacific Ocean. CBP has determined that the Dredge Act is applicable to U.S. territories.[203]

One or both of these laws could potentially apply to various aspects of critical mineral development on the OCS, including mining activities and transportation of mined seabed material from the OCS to the U.S. mainland for processing.[204] Based on CBP's prior interpretations for vessels supporting offshore oil, gas, and wind development, the agency could find the Jones Act applicable to vessels transporting minerals from an offshore mining site to a U.S. onshore point, as well as to vessels transporting supplies to an offshore site. In a 1988 ruling, CBP found that a vessel engaging in offshore phosphorus mining off the coast of North Carolina would be considered a dredge and therefore would be required to be U.S. built, owned, and crewed.[205] Similarly, CBP determined that pipe-laying vessels that dig a trench in the seafloor to lay pipe also are dredging vessels and thus must comply with the Dredge Act.[206] However, CBP determined that cable-laying vessels are not dredge vessels because they construct only a temporary slot in the sea floor.[207]

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[199] Remarks of Oliver Gunasekara, then-CEO and cofounder, Impossible Metals, in *Deep Dive: Examining the Regulatory and Statutory Barriers to Deep Seabed Mining*, hearing.

[200] For instance, one hearing witness stated that "current proposals involve a significant amount of stockpiling of nodules due to lack of refining capacity[,] and the cheapest place to stockpile a nodule is to leave it on the seafloor." Remarks by Andrew Thaler, CEO for Blackbeard Biologic: Science and Environmental Advisors, in *Deep Dive: Examining the Regulatory and Statutory Barriers to Deep Seabed Mining*, hearing.

[201] This section was authored by John Frittelli, CRS Specialist in Transportation Policy.

[202] Some seabed mining operations require two vessels: a production support vessel and a transport vessel. For more information on the Jones Act, see CRS Report R45725, *Shipping Under the Jones Act: Legislative and Regulatory Background*, by John Frittelli.

[203] Department of Homeland Security (DHS), U.S. Customs and Border Protection (CBP), "Application of the Dredge Statute (46 U.S.C. App. 292) to Dredging in American Samoa," Customs Ruling HQ 111878, September 4, 1991; and DHS, CBP, "Dredging; 46 U.S.C. §55109," Customs Ruling HQ H327270, November 14, 2022. Customs rulings can be accessed at https://rulings.cbp.gov/home.

[204] In the interest of national defense, under certain circumstances, U.S. navigation and vessel-inspection laws can be waived by the executive branch as per 46 U.S.C. §501.

[205] DHS, CBP, "Applicability of 46 U.S.C. App. 292 and 833 to the Exploration for, or the Extraction of, Resources from the Outer Continental Shelf Outside the United States Territorial Waters," Customs Ruling HQ 109081, May 12, 1988. BOEM found no records of a phosphate lease or of a company mining phosphate in or around 1988. BOEM interprets the CBP ruling as "not referencing an active lease, but rather as presenting a hypothetical situation" (Email correspondence from BOEM to CRS, November 1, 2024).

[206] DHS, CBP, "46 U.S.C. §55109; 43 U.S.C. §1333(a); Dredging, Outer Continental Shelf Lands Act; 43 U.S.C. §1333(a)(1)," Customs Ruling HQ H253621, August 14, 2014.

[207] DHS, CBP, "Coastwise Transportation; Undersea Cable Laying; Dredging; 46 U.S.C. §55102; 46 U.S.C. §55109; 19 C.F.R. §4.80b," Customs Ruling HQ H332364, July 25, 2023.

CBP's working definition of dredging is "the use of a vessel equipped with excavating machinery in digging up or otherwise removing submarine material"; however, in one ruling, the agency noted an alternative definition from the International Maritime Dictionary that defines dredging as a "vessel or floating structure equipped with excavating machinery, employed in deepening channels and harbors, and removing submarine obstructions such as shoals and bars."[208] This alternative definition could exclude mining vessels, as their purpose is not to deepen channels or harbors.

Based on these prior determinations, it is not clear whether CBP would consider modern seabed mining vessels to be dredging vessels or if its interpretation would depend on the method or technology used for mining. For instance, in the oil and gas sector, drill ships are not required to comply with these acts, nor are offshore oil and gas platforms.

The domestic build requirement can substantially impact the cost and availability of vessels. U.S. offshore vessel operators typically request a letter ruling from CBP concerning whether their proposed activity would require a Jones Act- or Dredge Act-compliant vessel. However, these letter rulings do not establish legal precedent and the agency has, in the past, proposed changing its interpretation. Thus, in addition to the cost and availability of U.S.-built vessels, uncertainty as to the regulatory landscape for vessels engaging in U.S. offshore mining could be an issue for Congress. Congress could consider whether to amend the Jones Act or Dredge Act to clarify whether vessels engaging in U.S. offshore mining and related transportation are subject to or exempt from these acts. The requirement for domestic-built seabed mining vessels might be moot if companies send seabed resources recovered from the OCS to foreign countries for processing due to a lack of U.S. processing capability, as discussed above.

Potential Marine Environmental Impacts of Seabed Mining[209]

Congress may weigh potential environmental impacts of mining on the OCS and consider whether certain federal agencies should mitigate such impacts. BOEM contends that "there is a need to identify areas that have high economic potential but low ecological value, making them potentially suitable for consideration for future leasing and development of critical minerals on the OCS."[210] BOEM, in collaboration with NASEM, has been developing environmental baseline information acquisition and assessment standards for critical mineral-related activities on the OCS (see "Critical Minerals Environmental Assessment Framework"). In addition, since 2019, BOEM, NOAA, and USGS have collaborated to study the long-term environmental impacts and ecosystem recovery of an area of the Blake Plateau disturbed during a 1970s seabed mining pilot project.[211] Congress may consider whether to support additional work by federal agencies to continue research on the Blake Plateau or other areas of the OCS that may elucidate the potential environmental impacts of seabed mining and provide environmental baseline information. Some stakeholders may oppose federal funding to study the impacts of seabed mining, characterized by

[208] DHS, CBP, "Dredging; 46 U.S.C. §55109," Customs Ruling HQ H327270, November 14, 2022.

[209] For more information about the potential marine environmental impacts of seabed mining that may be applicable to mining activities on the OCS, see CRS Report R47324, *Seabed Mining in Areas Beyond National Jurisdiction: Issues for Congress*, by Caitlin Keating-Bitonti, especially the section "Potential Marine Environmental Impacts of Seabed Mining."

[210] BOEM, *Budget Justifications and Performance Information Fiscal Year 2026*, p. 21.

[211] BOEM, "Scientists Explore Site of Historic Seabed Mining"; NOAA, "Investigation of a Historic Seabed Mining Equipment Test Site on the Blake Plateau"; and NOAA, "Searching for Historic Deep-Sea Mining Impacts on the Blake Plateau."

some as an "unproven industry,"[212] especially in light of the rate at which energy technologies using critical minerals are evolving. Some critical minerals, including those found in seabed deposits, may be of less interest in the future, should technologies (e.g., electric vehicle batteries) no longer require them.[213]

Some Members of Congress seek to address this issue in legislation. Some contend that "there is currently insufficient scientific information on the deep sea and related marine ecosystems to fully and accurately assess the risks and impacts of deep seabed mining activities" and have introduced H.R. 664 in the 119th Congress to prohibit BOEM from conducting any hard mineral leasing activities on the OCS.[214] Other bills in the 119th Congress would prohibit BOEM from issuing or extending a lease or any other authorization for exploration, development, or production related to marine minerals, as well as oil and gas activities, in specific areas on the Atlantic OCS (e.g., H.R. 2881, S. 1486) and Arctic OCS (e.g., H.R. 2848, S. 1445).

Congress may evaluate whether there is sufficient understanding of the effects of seabed mining on marine life. The potential effects of seabed mining on the marine environment are not completely understood, according to some scientists.[215] This is in part because commercial-scale seabed mining in areas beyond national jurisdiction under the ISA framework has yet to occur and only a few countries have allowed or tested seabed mining within their waters (see textbox above, "Countries Pursuing Seabed Mineral Resources on Their Continental Shelves"). Some stakeholders express concern that seabed mining activities may

- cause deep-sea habitat disturbance and marine biodiversity loss;
- disturb and disperse seafloor sediments, reducing water quality and clarity for benthic (i.e., living on or within the seafloor) organisms;
- create sediment plumes along the seabed where mining activities are taking place and in the water column where processed seabed material is discharged back into the ocean;
- crush, smother, or disperse benthic organisms;
- harm or affect the behaviors of marine mammals and some large fish; and
- alter natural marine processes such as deep-sea carbon storage.[216]

[212] The Ocean Foundation, *Deep Sea Mining Isn't Worth the Risk: High Costs, Financial Developments Since 2021, and Externalities Stand to Diminish Theoretical Returns on Investment*, 2024.

[213] For example, Casey Crownhart, "How Sodium Could Change the Game for Batteries," *MIT Technology Reviews*, May 11, 2023, https://www.technologyreview.com/2023/05/11/1072865/how-sodium-could-change-the-game-for-batteries/; and Tom LaTourrette et al., *The Potential Impact of Seabed Mining on Critical Mineral Supply Chains and Global Geopolitics*, RAND, 2025, p. 14.

[214] See Section 2(6) of H.R. 664 in the 119th Congress.

[215] BOEM, *Budget Justifications and Performance Information Fiscal Year 2026*, p. 21.

[216] For example, see Diva Amon et al., "Assessment of Scientific Gaps Related to the Effective Environmental Management of Deep-Sea Mining," *Marine Policy*, vol. 138 (2022), pp. 1-22; Daniel O. B. Jones et al., "Long-Term Impact and Biological Recovery in a Deep-Sea Mining Track," *Nature* (2025), pp. 1-7; Lisa Levin et al., "Defining 'Serious Harm' to the Marine Environment in the Context of Deep-Seabed Mining," *Marine Policy*, vol. 74 (2016), pp. 245-259; Kathryn Miller et al., "Challenging the Need for Deep Seabed Mining from the Perspective of Metal Demand, Biodiversity, Ecosystem Services, and Benefit Sharing," *Frontiers in Marine Science*, vol. 8 (July 2021), pp. 1-7, see p. 4; Holly Niner et al., "Deep-Sea Mining with No Net Loss of Biodiversity—An Impossible Aim," *Frontiers in Marine Science*, vol. 5 (2018); Beth Orcutt et al., "Impacts of Deep-Sea Mining on Microbial Ecosystem Services," *Limnology and Oceanography*, vol. 17, no. 7 (2020), pp. 1489-1510; and Rahul Sharma, "Environmental Issues of Deep-Sea Mining," *Procedia Earth and Planetary Science*, vol. 11 (2015), pp. 204-211.

Efforts to prohibit seabed mining activities on the OCS align with other proposals (e.g., H.R. 663 in the 119th Congress) for a precautionary pause or moratorium on deep-seabed mining in international waters until there is sufficient scientific information and knowledge of the deep sea.[217]

Proponents of seabed mining that is "properly managed with appropriate governance safeguards" assert that sourcing minerals from seabed deposits has the potential to create less pollution (e.g., tailings, waste), fewer impacts on freshwater sources, and fewer social impacts (e.g., human fatalities, injuries, health effects) compared with traditional land-based, open-pit, and underground mining.[218] For example, Impossible Metals contends that its collection technology is "environmentally conscious" because its autonomous underwater vehicle hovers above the seabed to minimize sediment disturbance and uses artificial intelligence for "selective harvesting" of polymetallic nodules to avoid detected life.[219] Instances of traditional land-based, open-pit, and underground mining have been associated with drinking water contamination, air pollution, and alteration of landscapes, among other impacts.[220] Some stakeholders have argued that seabed mining should not be considered a substitute for land-based mining because "as new deposits are discovered they are exploited *in addition* to land-based deposits, not instead of them."[221]

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[217] As of December 2025, 69 companies have signed a business statement calling for a moratorium on deep-seabed mining (https://www.stopdeepseabedmining.org/endorsers/), and 40 foreign governments have called for a moratorium on deep-seabed mining (https://deep-sea-conservation.org/solutions/no-deep-sea-mining/momentum-for-a-moratorium/governments-and-parliamentarians/). Also see letter from Rep. Grijalva et al. to President Biden, June 28, 2024, https://plus.cq.com/pdf/8043575.

[218] For example, Daina Paulikas et al., "Life Cycle Climate Change Impacts of Producing Battery Metals from Land Ores Versus Deep-Sea Polymetallic Nodules," *Journal of Cleaner Production*, vol. 275 (2020), p. 17.

[219] Impossible Metals, "Robotic Collection System."

[220] For example, Aboka Yaw Emmanuel et al., "Review of Environmental and Health Impacts of Mining in Ghana," *Journal of Health and Pollution*, vol. 8 (2018), pp. 43-52.

[221] Justin Alger et al., "The False Promise of Deep-Sea Mining," *npj Ocean Sustainability*, vol. 4 (2025), article 21, p. 2.

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