Boulder Relocation for Offshore Energy Development in Rhode Island: Artificial Reefs and Cross-Industry Collaboration

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Offshore energy development is expanding in the United States, and as developers build new projects, one consideration is the relocation of boulders that obstruct the energy cable and pipeline corridors.[1] There are various concerns associated with boulder relocation. For instance, boulder relocation may directly and indirectly affect local ecosystems.[2] Also, boulder relocation can affect fishing and navigation, injuring fishers' gear and vessels when snagged on or struck against the large rocks.[3] Laws and policies surrounding boulder relocation are still developing and regulatory approaches differ state to state. Among the evolving considerations are strategies to use the relocated boulders to create artificial reefs and to engage the local fishing industry in related decision-making processes. Thus, the purpose of this report is to analyze the federal and state laws and policies that govern boulder relocation, artificial reef creation, and mechanisms to engage fishers in planning offshore energy developments. This report contains four sections, the first providing background information on boulder relocation and its corresponding effects. Then, Section 2 analyzes the existing legal framework in both federal and state waters. Lastly, Section 3 discusses cross-industry collaboration in the planning and permitting of offshore energy developments.

1 Background

The physical construction of offshore energy infrastructure often requires the relocation of boulders that obstruct the development areas, which raises concerns for some communities. In both offshore drilling operations and wind farm construction, developers lay underwater cable or pipe as well as some sort of anchoring to support the surface structure.[4] While developers may try to plan around

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[1] *See generally* REVOLUTION WIND, CONSTRUCTION AND OPERATIONS PLAN: REVOLUTION WIND FARM 87-89 (2023), https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Revolution%20Wind%20COP%20Volume%201%20March%202023_v2_508c_Section_4.4.3.1_Redacted.pdf [hereinafter REVOLUTION WIND COP] (explaining how the developer may deal with boulder clearance for construction of the wind farm).

[2] *Boulder Relocation in Offshore Wind Development: A Framework for Guidance and Policy*, MASS. OFF. OF COASTAL ZONE MGMT. 1-2 (Nov. 2024), https://www.mass.gov/doc/boulder-relocation-in-offshore-wind-development-a-framework-for-guidance-and-policy/download [hereinafter *Mass. CZM Framework*]. *See generally* Elizabeth T. Methratta et al., *Offshore wind project-level monitoring in the Northeast U.S. continental shelf ecosystem: evaluating the potential to mitigate impacts to long-term scientific surveys*, 10 FRONTIERS IN MARINE SCI. 1, 5 (2023) (explaining scientific studies on the impacts of boulder relocation on benthic ecosystems are likely forthcoming); Ibon Galparsoro et al., *Reviewing the Ecological Impacts of Offshore Wind Farms*, NPJ 1 OCEAN SUSTAINABILITY 1 (2022) (analyzing generally the impacts of offshore wind farms on ecosystems).

[3] *Mass. CZM Framework*, *supra* note 2, at 1-4.

[4] *See The Basics of Offshore Oil & Gas*, NAT'L OCEAN INDUS. ASS'N, https://www.noia.org/basics-offshore-oil-gas/ (last visited June 27, 2025) (explaining the physical infrastructure of offshore oil and gas platforms); *Offshore Wind 101*, N.Y. STATE ENERGY RSCH. & DEV. AUTH., https://www.nyserda.ny.gov/All-Programs/Offshore-Wind/About-Offshore-Wind/Offshore-Wind-101 (last visited June 27, 2025) (explaining the physical infrastructure of offshore wind farms).

substantial underwater boulder fields, boulder relocation is often an expected reality for offshore projects. The type of construction on that area of seabed (corridors or foundations) and the sizes of the boulders dictate boulder relocation decisions.[5] In this context, a "boulder" is generally any rock of at least 0.5 meters in diameter, though conversations on that definition are ongoing.[6] Developers will typically opt to individually relocate any boulder above 0.5 meters through the use of a "grabber," which is a large claw-like tool deployed from a vessel down onto the seabed.[7] With this style of clearance, developers place boulders in a new location that may create obstacles for navigation, fishing, and local aquatic ecosystems.[8] Specifically, relocated boulders can create hangs or snags that obstruct and damage fishers' trawling gear.[9] Also, the vessels themselves may strike these boulders and sustain substantial damage, which may also cause bodily harm.[10] These safety concerns have contributed to Rhode Island's growing desire to better understand boulder relocation practices.

The practice of boulder relocation may also substantially affect surrounding benthic ecosystems.[11] Economically viable species, such as Jonah crabs, quahogs, scallops, clams, and lobsters, may reside in the benthic region of the seabed directly disrupted during boulder relocation.[12] Additionally, the drape of loose sediment from falling boulders and sonic interference from construction may affect underwater vegetation and other photosynthesizing organisms.[13] Fishers may feel the negative impacts of boulder relocation on the local ecosystems through the movement of economically viable species and drops in stock levels.[14] Consequently, conversations among developers, fishers, and regulators increasingly center on addressing a variety of concerns associated with boulder relocation.

There are various innovative ideas on how boulder relocation can help mitigate negative effects of offshore energy development or provide other ecological benefits. For instance, developers may repurpose boulders as scour protection for underwater cables and pipes.[15] There is also interest in clustering relocated boulders to create artificial reefs to benefit local marine ecosystems as artificial

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[5] *See* REVOLUTION WIND COP, *supra* note 1 (explaining which techniques are used for certain sizes of boulders).
[6] *Mass. CZM Framework*, *supra* note 2, at 1; *see, e.g.*, *Conditions of Construction and Operations Plan Approval: Lease Number OCS-A 0483*, U.S. DEP'T OF THE INTERIOR: BUREAU OF OCEAN ENERGY MGMT. 28 (Jan. 28, 2024), https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/CVOW-C-Conditions-COP-Approval-OCS-A-0483.pdf (using the 0.5-meter standard).
[7] *Boulder Relocation and Debris Removal*, HUGHES SUBSEA, https://www.hughes-subsea.com/services/boulder-relocation-debris-removal/ (last visited June, 27 2025).
[8] *Mass. CZM Framework*, *supra* note 2.
[9] *Id.* at 1-4.
[10] *Id.* at 1.
[11] *Id.* at 1-2. *See generally* Elizabeth T. Methratta et al., *supra* note 2; Ibon Galparsoro et al., *supra* note 2.
[12] COMM. ON EVALUATION OF HYDRODYNAMIC MODELING AND IMPLICATIONS FOR OFFSHORE WIND DEV., POTENTIAL HYDRODYNAMIC IMPACTS OF OFFSHORE WIND ENERGY ON NANTUCKET SHOALS REGIONAL ECOLOGY 93 (Nat'l Acads. Press 2024).
[13] *Mass. CZM Framework*, *supra* note 2, at 2, 3.
[14] *See* Ibon Galparsoro et al., *supra* note 2. *But see South Fork Wind Benthic Monitoring Program*, INSPIRE ENV'T, https://storymaps.arcgis.com/stories/43138bdb3826449bbc4ce2b3eba49bb0 (last visited June 24, 2025).
[15] *Maine Offshore Wind Roadmap*, ME. OFFSHORE WIND INITIATIVE 92 (Feb. 2023), https://www.maine.gov/energy/sites/maine.gov.energy/files/inline-files/Maine_Offshore_Wind_Roadmap_February_2023.pdf (outlining several "Action" items, including the creation of transmission "backbones"); *see also* Enzo M. Kingma et al., *Guardians of the seabed: Nature-inclusive design of scour protection in offshore wind farms enhances benthic diversity*, 199 J. OF SEA RSCH. 102502, 2 (2024) (defining scour protection as a mechanism to prevent seabed erosion due to offshore energy development).

reefs can provide alternative structures for fish to spawn and benthic species to live within.[16] There are, however, various legal and policy considerations associated with the creation of artificial reefs, which are discussed in Section 2 of this report. Furthermore, there is widespread interest in engaging fishers in the decision-making processes because such cross-industry collaboration can inform fishers of changes to their routine fishing areas and enable them to advise developers on where to move the boulders to mitigate cascading environmental impacts.

2 Legal Framework for Boulder Relocation and Artificial Reefs

A network of federal and state entities and laws governs boulder relocation and artificial reefs. Pursuant to federal law, the national government oversees leasing on the Outer Continental Shelf (OCS), which generally begins three nautical miles from land.[17] The lead permitting authorities on the OCS are the Bureau of Ocean Energy Management (BOEM) and the U.S. Army Corps of Engineers (USACE).[18] Developments in state waters, or coastal zones within three nautical miles of the coastline, typically fall under the jurisdiction of state agencies.[19] In Rhode Island, the Coastal Resources Management Council (CRMC) oversees state waters and plays a role in permitting processes.[20] Thus, the creation of artificial reefs using relocated boulders resides within federal and state statutory and regulatory processes.

2.1 Federal Requirements

BOEM, the lead permitting agency for offshore energy developments on the OCS, published a series of guidelines for developers seeking a permit.[21] To receive a permit and begin construction on the OCS, developers must show a plan that they are prepared to use best management practices to ensure that their development will not interfere with other, competing uses of the surrounding water.[22] BOEM requires applicants to submit a site assessment plan (SAP) to ensure all resources, interests, and uses of the proposed site are recognized and addressed.[23] Developers must also submit a general activities plan (GAP) to grant easements and rights-of-way for proposed sites.[24] Finally, BOEM requires a construction operations plan (COP) detailing exactly what will be constructed and

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[16] *See generally* Avery B. Paxton et. al., *Meta-Analysis Reveals Artificial Reefs can be Effective Tools for Fish Community Enhancement but are not One-Size-Fits-All*, 7 FRONTIERS IN MARINE SCI. 1 (2020).

[17] 43 U.S.C. § 1331(a); *id.* § 1301(a)(2). *See generally id.* § 1301(b) (explaining that coastal states bordering the Gulf of Mexico are entitled to submerged lands three marine leagues, or nine miles, into the Gulf); United States v. Louisiana, 363 U.S. 1, 83 (1960) (establishing that Texas and Florida are entitled to submerged lands up to three marine leagues into the Gulf of Mexico while Louisiana, Mississippi, and Alabama are limited to three geographical miles).

[18] 30 C.F.R. § 585.100; 33 C.F.R. § 320.2(b); *see also* 33 C.F.R. § 322.5(b) (providing the USACE's regulations on artificial reefs).

[19] 43 U.S.C. § 1312.

[20] R.I. GEN. LAWS § 46-23-1(b)(1); *see also* 16 U.S.C. § 1456(c)(1)(A). *See generally* Ocean Special Area Management Plan, 650 R.I.C.R. 20-00-1.

[21] *See Guidelines for Providing Information for Mitigating Impacts to Commercial and For-Hire Recreational Fisheries on the Outer Continental Shelf Pursuant to 30 CFR Part 585*, BUREAU OF OCEAN ENERGY MGMT. (Jan. 2025), https://www.boem.gov/sites/default/files/documents/renewable-energy/Fisheries-Mitigation-Guidance_0.pdf.

[22] 43 U.S.C. § 1337(p)(4)(I).

[23] *See* 30 C.F.R. § 585.611 (detailing information developers must include in SAPs); *see, e.g.*, DEEPWATER WIND NEW ENGLAND, LLC, SITE ASSESSMENT PLAN: DEEPWATER WIND: NORTH LEASE OCS-A 0486 (2016), https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/RI/2016-11-16_Deepwater_North-Lease-SAP_Final_Clean-%281%29.pdf.

[24] *See* 30 C.F.R. § 585.640 (explaining GAPs).

how it would be decommissioned.[25] Furthermore, BOEM has codified criteria that must be present in developers' plans (SAPs, GAPs, and COPs) and which guide evaluations during application review.[26] First, a project and its construction must not "unreasonably interfere" with other uses of the OCS.[27] Second, the developer must have proof that they consulted with relevant contacts regarding the potential impacts of the project.[28] Next, the developer must consider any impacts on commercial and recreational fisheries from the project.[29] BOEM also requires the developer to propose measures for "avoiding, minimizing, reducing, eliminating, and monitoring environmental impacts."[30] Lastly, the developer must submit any additional information that BOEM may request.[31] Therefore, BOEM is able to look at the developer's preliminary assessment of boulders that may need clearance (in the SAP) and how the developer plans to relocate them (in the COP) before they consent to any construction on the OCS. During this review process, BOEM and developers may consider the use of relocated boulders to create artificial reefs as a mechanism to mitigate environmental impacts. Therefore, decisions to use relocated boulders to create artificial reefs can potentially reside in BOEM's review process, which may be a useful avenue for regulators and other interested parties in Rhode Island to understand and explore.

Pursuant to the Rivers and Harbors Act, the USACE is responsible for the permitting of activities within the nation's navigable waters, including the creation of artificial reefs.[32] The USACE also follows codified criteria to guide their permitting decisions.[33] To obtain the USACE's approval, the artificial reef must enhance fisheries, facilitate access for fishers, prevent any unreasonable obstructions to navigation, minimize conflicts of use and environmental impacts, and comply with international law principles.[34] The National Marine Fisheries Service (NMFS), a federal agency that oversees the conservation of living marine resources, created the National Artificial Reef Plan to inform and advise on relevant technical and administrative facets of artificial reefs.[35] According to that Plan, "Proper siting is vital to the success of an artificial reef. The initial focus should be to enhance or create habitat and a diversity of fishery resources, while not impeding or interfering with navigation."[36] Among other areas to avoid when siting, NMFS specifically mentions unstable bottoms such as pipelines and cables.[37] This may hinder the permitting of boulder co-location in and around cable corridors and foundations but may help to bolster plans to co-locate boulders away from offshore developments. Thus, if a developer's offshore energy development plans include a

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[25] *See id.* § 585.620 (explaining COPs); *see, e.g.*, SUNRISE WIND, CONSTRUCTIONS & OPERATIONS PLAN: SUNRISE WIND FARM PROJECT (2023), https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/SRW01_COP_2023.pdf; SOUTH FORK WIND, CONSTRUCTION & OPERATIONS PLAN: SOUTH FORK WIND FARM (2021), https://www.boem.gov/sites/default/files/documents/renewable-energy/South-Fork-Construction-Operations-Plan.pdf; REVOLUTION WIND COP, *supra* note 1.
[26] *See* BUREAU OF OCEAN ENERGY MGMT., *supra* note 21, at 3.
[27] 30 C.F.R. §§ 585.606(d), 585.621(d).
[28] *Id.* §§ 585.610(a)(13), 585.626(a)(17).
[29] *Id.* §§ 585.611(b)(7), 585.627(a)(7).
[30] *Id.* §§ 585.610(a)(8), 585.626(a)(13).
[31] *Id.* §§ 585.610(a)(17), 585.626(a)(21).
[32] *See generally* 33 C.F.R. §§ 322.5(a), (b).
[33] *See id.* § 322.5(b)(1).
[34] *Id.* §§ 322.5(b)(1)(i)-(vi).
[35] *See National Artificial Reef Plan (As Amended): Guidelines for Siting, Construction, Development, and Assessment of Artificial Reefs*, NAT'L OCEANIC AND ATMOSPHERIC ADMIN. (Feb. 2007), https://media.fisheries.noaa.gov/dam-migration/noaa_artificial_reef_guidelines.pdf [hereinafter *National Artificial Reef Plan*]. *See generally* Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1801(c)(3).
[36] *National Artificial Reef Plan*, *supra* note 35, at 15.
[37] *Id.* at 22.

proposal to create an artificial reef, then the developer may need a USACE permit and to consult the National Artificial Reef Plan.

Several other laws and policies help guide BOEM's and the USACE's approval or denial of permits to ensure that these federal actions do not unreasonably harm a development's surrounding environment. NMFS administers the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to protect "essential fish habitats" (EFHs) during offshore development and other marine construction projects.[38] These habitats are areas deemed essential for "spawning, breeding, feeding or growth to maturity."[39] Areas currently designated as "essential" are fairly expansive, spanning from the Gulf of Maine into the Chesapeake Bay.[40] Pursuant to the MSA, review of permits in these areas must ensure the protection of essential habitats.[41] BOEM (in the case of offshore energy development) or the USACE (in the case of an artificial reef) would need to notify NMFS of any action or permit that may affect EFHs "as early as practicable" so NMFS may work with the permitting agency to advise and discuss measures needed to conserve and protect the EFHs.[42] This collaboration includes a thirty-day review period, which allows NMFS to raise any questions and concerns regarding the project's impact on EFHs.[43] Therefore, if a developer is planning on relocating boulders into an EFH, NMFS may provide guidance to protect the habitats and potentially affect the developer's use of relocated boulders to create an artificial reef.[44]

Boulder relocation may also trigger the federal Endangered Species Act of 1973 (ESA), which is similar to the MSA, but it aims to protect endangered and threatened species (which can include but are not limited to fish).[45] Pursuant to the ESA, "[A]ll Federal departments and agencies shall seek to conserve endangered species and threatened species and shall use their authorities in furtherance of the purposes of [the ESA]."[46] The government implements this objective through state and federal coordination to resolve resource issues and promote the conservation of endangered and threatened species.[47] In accordance with the ESA, NMFS is able to advise the permitting process, ensuring that artificial reefs and offshore developments are sited away from protected species.[48] If a developer is planning to relocate boulders into an area that threatens a protected species, they would need to address this issue before construction begins. Likewise, developers must site artificial reefs in locations that do not disturb protected species to receive approval from the USACE.

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[38] *See* 16 U.S.C. § 1801(b)(7).
[39] *Id.* § 1802(10) (defining "essential fish habitat" as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.").
[40] *See New England Essential Fish Habitat*, NAT'L OCEANIC AND ATMOSPHERIC ADMIN. (2013), https://www.habitat.noaa.gov/protection/efh/newInv/maps/neweng_efh-min.png.
[41] 16 U.S.C. § 1801(b)(7).
[42] *See* 50 C.F.R. §§ 600.920(a)(3), (h), (i).
[43] *Id.* § 600.920(h)(4).
[44] *E.g.* BUREAU OF OCEAN ENERGY MANAGEMENT, REVOLUTION WIND FARM AND REVOLUTION EXPORT CABLE – OFFSHORE WIND ENERGY PROJECT: ESSENTIAL FISH HABITAT ASSESSMENT—ADDENDUM 5 (Mar. 20, 2023), https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/RevWind_NMFS%20EFH_Addendum.pdf (providing NFMS's suggestions and comments on boulder relocation plans and BOEM's response).
[45] *See generally* Endangered Species Act, 16 U.S.C. §§ 1531-1544.
[46] *Id.* § 1531(c)(1).
[47] *Id.* § 1531(c)(2).
[48] *See id.* § 1531(c)(1).

Boulder relocation may also trigger the federal Marine Mammal Protection Act of 1972 (MMPA), which restricts the taking, possession, and transportation of marine mammals.[49] Due to the potential for "incidental takings" of marine mammals during construction, developers must apply for a NMFS authorization to grant permission to conduct the activities.[50] NMFS requires a developer to submit a request detailing how, where, and when they may be taking marine mammals, the numbers and species of marine mammals in that area, the anticipated effects, the types of takings that may occur, and the developer's plans for mitigating and monitoring those impacts on marine mammals.[51] NMFS will then publish this request in the Federal Register for a thirty-day public comment period.[52] Relying upon the relevant science and public input, NMFS may decide to grant an incidental take or harassment authorization that can include additional caveats and policies to regulate the authorized activity.[53] Thus, when a developer's boulder relocation plan may result in disturbances to marine mammals or their habitats, the developer may need to acquire an incidental take authorization from NMFS. This regulatory process may impact the ability of developers to use relocated boulders to create artificial reefs in certain locations.

2.2 Rhode Island's Requirements

Pursuant to the federal Submerged Lands Act, offshore projects in state waters fall under that state's authority.[54] In Rhode Island, CRMC is the principal state agency regulating the state's waters. CRMC developed Rhode Island's Ocean Special Area Management Plan (Ocean SAMP) in 2010, which provides a "regulatory framework for promoting a balanced and comprehensive ecosystem-based management approach to the development and protection of Rhode Island's ocean-based resources."[55] The Ocean SAMP outlines areas which the state may preclude from development as a matter of policy.[56] This includes any development in an Area of Particular Concern, which encompasses areas with fragile physical features, important habitats, high recreational value, and other characteristics.[57] The Ocean SAMP prohibits offshore development in areas where this type of development may harm identified sensitive habitats.[58] The Ocean SAMP similarly prohibits harmful large-scale development in Areas Designated for Preservation, which are areas in which the state provides additional protection because "of scientific evidence indicating that large-scale offshore development in these areas may result in significant habitat loss."[59] The Ocean SAMP also precludes projects that would be hazardous to commercial navigation in areas of high-intensity marine traffic.[60] If a developer proposes a project on a valid site (and one not precluded from development), CRMC may grant the developer the necessary permissions.[61] The developer must first submit a state-level SAP outlining what studies and tests they plan to conduct on the proposed site.[62] This research

[49] *Id.* § 1371(a); 50 C.F.R §§ 216.1, 216.3 (defining "take" as "to harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect, or kill any marine mammal.").
[50] *See* 50 C.F.R. § 216.104(a).
[51] *Id.* §§ 216.104(a)(1)-(14).
[52] *Id.* § 216.104(b)(2).
[53] *Id.*
[54] 43 U.S.C § 1301(b).
[55] Ocean Special Area Management Plan, 650 R.I.C.R. 20-05-8.2. *See generally* Ocean Special Area Management Plan, 650 R.I.C.R. 20-05-8.1(A).
[56] Ocean Special Area Management Plan, 650 R.I.C.R. 20-05-11.10.2, 20-05-11.10.3.
[57] *Id.* 20-05-11.10.2(A)(1)-(6).
[58] *Id.* 20-05-11.10.2(B).
[59] *Id.* 20-05-11.10.3(A).
[60] *Id.* 20-05-11.10.4(A).
[61] *See generally id.* 20-00-1.
[62] *Id.* 20-05-11.10.5(C)(1).

would include tests like geophysical and geological surveys, hazards surveys, archaeological surveys, biological surveys, and other necessary research.[63] With their SAP, the developer must also submit a COP describing the project's construction, operations, and decommissioning plans.[64] Before construction, the applicant meets with CRMC, the Joint Agency Working Group, and the Fishermen's Advisory Board to discuss any potential concerns and corresponding minimization strategies before moving forward.[65] Thus, a proposal or request to use relocated boulders to create artificial reefs in state waters may need to undergo this state-level regulatory process.

It is more likely that a developer will site an offshore energy project in federal waters off Rhode Island's coast than state waters; in that situation, the project must comply with that state's coastal management policies if the effects may be felt in Rhode Island's coastal zone.[66] Pursuant to the federal Coastal Zone Management Act, any federally-permitted development on the OCS must be "consistent to the maximum extent practicable" with approved state policies.[67] Revolution Wind's USACE permit, particularly "Special Condition 24," provides an example of this federal and state collaboration on boulder relocation.[68] During the USACE's permit issuance, the agency delegated regulatory power to the Rhode Island Department of Environmental Management (RIDEM) to ensure that boulder relocation within Narragansett Bay does not interfere with aquatic vegetation or benthic species.[69] Specifically, the USACE required that RIDEM approve boulder relocation plans addressing sensitive habitats and additional benthic monitoring. By granting some regulatory oversight to state environmental agencies, the USACE can gain input from scientists and regulators with expertise in the local waterways and ecosystems that the development would impact. This helps to ensure that any detrimental impacts of activities like boulder relocation or artificial reef siting would be addressed before construction begins.

Lastly, artificial reefs between the shoreline and the inner OCS boundary are under state regulation, in addition to USACE oversight, which CRMC would primarily oversee in Rhode Island.[70] The state generally prohibits construction of large artificial reefs (those with a half-acre footprint and of at least four feet high) in Areas of Particular Concern and Areas Designated for Preservation due to their natural importance and fragility.[71] All artificial reefs are prohibited in waters less than sixty-five feet deep and areas deemed "critical" under the Endangered Species Act.[72] If a developer proposes construction in a valid location, the developer needs CRMC's assent.[73] Therefore, the requirements

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[63] *Id.* 20-05-11.10.5(C)(1)(a).
[64] *Id.* 20-05-11.10.5(C)(2).
[65] *Id.* 20-05-11.10.5(C)(1)(g), (h).
[66] *See* Coastal Zone Management Act, 16 U.S.C. § 1456(c).
[67] *Id.* § 1456(c)(1)(A) ("Each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs.").
[68] *Department of the Army Permit: Kellen Ingalls, Orsted/Revolution Wind, LLC*, U.S. ARMY CORPS OF ENG'RS 8-9 (2023), https://www.nae.usace.army.mil/Portals/74/docs/regulatory/2023%20Permits/20231003_Final_Signed_USACE_Permit.pdf?ver=gz46GRCgrUd_G-Kibeiwrg%3D%3D.
[69] *Id.* at 8.
[70] R.I. GEN. LAWS § 46-23-1(b)(1).
[71] *See* Ocean Special Area Management Plan, 650 R.I.C.R. 20-05-11.10.2, 20-05-11.10.3.
[72] *Id.* 20-05-11.10.3(A)(1), (3); *see also* Jennifer McCann & Sarah Schumann, *The Rhode Island Ocean Special Area Management Plan: Managing Ocean Resources Through Coastal and Marine Spatial Planning: A Practitioner's Guide*, COASTAL RES. CTR. 35 (2013), https://www.crmc.ri.gov/samp_ocean/reports/Ocean_SAMP_Practioners_Guide.pdf.
[73] *See* Ocean Special Area Management Plan, 650 R.I.C.R. 20-00-1.1.5, 20-00-1.3.1(A) (providing the requirements for Category B Assents).

for a developer to use relocated boulders to create artificial reefs in state waters require consideration of CRMC's requirements as well.

2.3 Policies in Other Jurisdictions

Discrete policies on innovative boulder relocation practices for offshore energy development in the United States are relatively nascent. As a result, there are not many states with illustrative policies, specifically as they pertain to the use of relocated boulders to create artificial reefs. Massachusetts and Maine are two states that do have guidelines that may be of interest in Rhode Island. Developers and fishers in Scotland, however, are further along in this topic and have produced informative policies and guidelines.

Massachusetts has some of the clearest and most explicit guidance on boulder relocation in the United States, though the guidance has not been codified in state law. Similar to CRMC, the Massachusetts Office of Coastal Zone Management (Massachusetts CZM) is the lead regulatory authority over offshore development in state waters.[74] In collaboration with the Massachusetts Division of Marine Fisheries, Massachusetts CZM suggests a three-pronged framework regarding boulder relocation.[75] The first component of this hierarchical approach is to avoid relocation entirely.[76] In practice, this would involve siting projects away from boulder fields. If boulder relocation cannot be avoided, regulators and developers should minimize the impacts of relocation.[77] For instance, developers can move boulders into similar habitats (for less species disruption), grab the boulders individually (rather than plowing or dredging), and place relocated boulders in areas where state law precludes mobile gear fishing (to minimize the impacts on fishers and their gear), among other strategies.[78] The final prong in Massachusetts CZM's approach is ongoing mitigation.[79] Even after minimizing impacts, regulators and developers may further mitigate the residual effects through clear communication of boulders' new locations (for fishers' safety and preservation of their gear) as well as exploring beneficial uses of the boulders (like scour protection, cable armoring, or artificial reefs).[80] Finally, Massachusetts CZM's framework calls for monitoring of benthic habitats throughout the relocation process to gain valuable insight on how exactly the development impacted ecosystems and local species.[81] This framework may be a useful reference for Rhode Island as the state and its stakeholders develop policies and practices.

While not as explicitly applicable as Massachusetts' guidance, Maine has also published guidance that applies to boulder relocation within state waters.[82] Within their offshore wind roadmap, Maine identifies four strategies to protect Maine's environmental resources through the course of offshore development.[83] The first is to facilitate and encourage early consultations with their natural resources

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[74] MASS. GEN. LAWS ch. 21A, § 4A.
[75] *See generally Mass. CZM Framework*, *supra* note 2.
[76] *Id.* at 2-3.
[77] *Id.* at 3.
[78] *Id.*
[79] *Id.* at 3-4.
[80] *Id.*
[81] *Id.* at 4.
[82] *See generally Maine Offshore Wind Roadmap*, ME. OFFSHORE WIND INITIATIVE (Feb. 2023), https://www.maine.gov/energy/sites/maine.gov.energy/files/inline-files/Maine_Offshore_Wind_Roadmap_February_2023.pdf.
[83] *See id.* at 92.

agencies when BOEM is pursuing a project off Maine's coast.[84] Maine also aims to site projects in high-use areas so the development will result in minimal environmental disruption.[85] The state also mentions the exploration of co-location strategies (which they refer to as a transmission "backbone") to achieve minimal benthic disruption.[86] Using a common corridor for cables essentially lining its exterior with boulders could allow developers to minimize impacts on fishing and local ecosystems.[87] This co-location strategy may be particularly relevant in an artificial reef context, as a "backbone" of boulders may have similar benefits as an artificial reef but potentially without the same permitting requirements. Thus, Rhode Island may also look to Maine's policies to help develop a comprehensive approach to boulder relocation.

Additionally, due to physical characteristics of Scotland's waters, Scottish offshore developments have particularly informative boulder relocation policies. Moray West Offshore Wind Farm, which is located off Scotland's northeast coast, has employed several policies for relocating the many large boulders littering the seabed.[88] The developer designated the relocation of boulders in certain areas, including scour protection areas, foundation boundaries, export, inter-array, and OSPs inter-connector cable corridors, and post pre-lay grapnel runs.[89] Notably, the policies utilize a 0.5-meter boulder size limit in scour protection areas and foundation boundaries and a 0.3-meter boulder size limit in export, inter-array, and OSPs inter-connector cable corridors.[90] The upper limit for boulder relocation is twelve tons, and the developer would only relocate boulders visible on the seabed's surface.[91] When developers must relocate boulders, they will generally move the boulders "to the minimum possible distance from the clearance area," which is a maximum of fifteen meters from cable corridors and 150 meters from foundation boundaries and scour protection.[92] The developer will then drop the boulders from a minimal height to reduce seabed disturbance in their new locations.[93] Finally, the developer will survey the site again to ensure they did not mistakenly leave any boulders behind.[94] These policies exemplify strategies that U.S. states have contemplated, but Moray West Offshore Wind Farm's approach to boulder relocation is more detailed and robust.[95] Thus, it may be beneficial for interested parties in the United States to refer to Scottish developers' and fishers' practices and experiences.

3 Cross-Industry Collaboration

As previously mentioned in this report, there is policy interest in identifying mechanisms to engage fishers in decision-making processes for offshore energy development. Fishers and developers may derive mutual benefits from sharing data to identify best locations to site offshore energy

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[84] *Id.*
[85] *Id.*
[86] *Id.*
[87] *Id.*
[88] *See* MORAY OFFSHORE WINDFARM (WEST) LTD., BOULDER AND DEBRIS RELOCATION – SUPPORTING INFORMATION (2022), https://marine.gov.scot/sites/default/files/8460005-dg0210-mww-app-000001_moray_west_boulder_clearance_marine_licence_supporting_information_final_12122022_redacted-_00010192.pdf.
[89] *Id.* at 6-8.
[90] *Id.* at 9.
[91] *Id.*
[92] *Id.*
[93] *Id.*
[94] *Id.* at 10.
[95] *See, e.g.*, REVOLUTION WIND COP, *supra* note 1; *Mass. CZM Framework*, *supra* note 2.

infrastructure, determine where to place relocated boulders, and avoid and mitigate related environmental and safety effects.

The National Environmental Policy Act (NEPA) may be one federal mechanism for fishers to engage in offshore energy and boulder relocation decisions. NEPA is a statute under which federal agencies proposing a major federal action that may have significant environmental effects draft an Environmental Impact Statement and provide the public with an opportunity to review, comment on, and potentially influence the proposed action.[96] In January 2025, however, President Trump signed Executive Order number 14154, "Unleashing American Energy," to encourage and expedite energy production on federal lands.[97] Pursuant to this Executive Order, the Council on Environmental Quality's (the federal agency historically responsible for implementing NEPA) policies guiding NEPA implementation have been removed from the Code of Federal Regulations, and the Executive Order directed the Council to revise its guidelines to "prioritize efficiency and certainty over any other objectives . . . ."[98] Thus, federal agencies are continuing to comply with NEPA's statutory requirements without the Council's regulatory guidelines. As these changes are continuing during the writing of this report, fishers' ability to engage in NEPA's review processes for offshore energy development is unclear. Notably, on July 3, 2025, the Department of Defense published a proposed rule on the Federal Register that states, "The Army is repealing the Corps' prior procedures and practices for implementing NEPA" and that, if the Department adopts this proposed rule, it will no longer provide public opportunities for notice and comment.[99] Additionally, the U.S. Department of the Interior recently implemented emergency permitting procedures to expediate the process for certain energy developments.[100] Projects for crude oil, natural gas, refined petroleum, coal, and geothermal heat (among others) qualify for expedited permitting.[101] For these permits, the official evaluating environmental impacts will determine an appropriate length for the public comment period, which will likely be approximately ten days.[102] This leaves the public (including fishers) with less time to comment on a project's EIS before construction begins. Therefore, the potential for fishers to engage in NEPA review processes for offshore energy development and boulder relocation may change as federal agencies navigate the implementation of their individual NEPA processes, but it may still be a viable option for fishers.

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[96] *See* National Environmental Policy Act, 42 U.S.C. §§ 4321-4370m-12; *see also National Environmental Policy Act Review Process*, U.S. ENV'T PROT. AGENCY (Apr. 11, 2025), https://www.epa.gov/nepa/national-environmental-policy-act-review-process (detailing the NEPA review process).

[97] *See* Exec. Order No. 14154, 90 Fed. Reg. 8353 (Jan. 29, 2025).

[98] *Id.* at 8355.

[99] Procedures for Implementing NEPA; Removal, 90 Fed. Reg. 29461, 29463 (July 3, 2025),

[100] Press Release, U.S. Department of the Interior, Department of the Interior Implements Emergency Permitting Procedures to Accelerate Geothermal Energy Development for National Security and Energy Independence (May 30, 2025), https://www.doi.gov/pressreleases/department-interior-implements-emergency-permitting-procedures-accelerate-geothermal.

[101] *Frequently Asked Questions about the Department of the Interior's Emergency Procedures for Compliance with the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and Endangered Species Act (ESA) for Projects That Will Address the National Energy Emergency*, U.S. DEP'T OF THE INTERIOR 1 (2025), https://www.doi.gov/sites/default/files/documents/2025-06/frequently-asked-questions-about-department-interior-s-emergency-procedures-compliance-nepa-nhpa-and_0.pdf.

[102] *Alternative Arrangements for NEPA Compliance*, U.S. DEP'T OF THE INTERIOR 2 (2025), https://www.doi.gov/sites/default/files/documents/2025-04/alternative-arrangements-nepa-during-national-energy-emergency-2025-04-23-signed_1.pdf.

At the state level, one of the primary ways Rhode Island engages the public in the permitting process is through CRMC's Class (or Category) B Assents.[103] Pursuant to Rhode Island's "Red Book" (the state's Coastal Resources Management Program), any project or operation within state waters requires a CRMC Assent.[104] State law requires Class B Assents for any energy-related activity in tidal waters.[105] Once CRMC has received a developer's application for a Class B Assent, the agency provides formal notice to all interested parties and, if there are any substantial objections to the proposed activity, schedules a public hearing.[106] CRMC issues a Class B Assent if it finds the proposed activity conforms with the state's goals and requirements.[107] Thus, this process may be a state-level opportunity for fishers to engage in decision-making processes for offshore energy development.

Additional state-level opportunities for public engagement processes reside within the issuance of other permits developers may need to obtain from RIDEM or CRMC.[108] For instance, a developer may need to apply for a Rhode Island Pollutant Discharge Elimination System (RIPDES) permit[109] or a Water Quality Certificate.[110] Prior to issuing a RIPDES permit, RIDEM must host a public hearing and provide notice of such opportunity at least thirty days before the date of the hearing.[111] Similarly, prior to issuing a Water Quality Certificate, RIDEM must provide public notice, a thirty-day comment period, and, upon request by twenty-five people, an organization of at least twenty-five people, or another governmental agency, an opportunity for oral comments.[112] Thus, if state law requires an offshore energy developer to obtain those permits, fishers and other interested actors may have an opportunity to influence boulder relocation decisions.

Due to the prevalence of the fishing industry in Rhode Island, the state's Ocean SAMP established the Fishermen's Advisory Board (FAB) to create an official advisory body to represent the industry's interests during permitting processes.[113] The FAB consists of up to twenty members, including up to two members representing each of six prescribed fisheries, up to two members representing the Rhode Island seafood processing industry, and up to six Massachusetts fishers who actively fish the Ocean SAMP waters.[114] Before construction begins, the FAB meets with CRMC and the developer, which provides the board with an opportunity to directly voice any concerns or impacts that may affect Rhode Island's fishing industry.[115] Therefore, the FAB is another state-level mechanism for fishers to affect offshore energy development and boulder relocation.

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[103] *See generally* Ocean Special Area Management Plan, 650 R.I.C.R. 20-00-1.1.5, 20-00-1.3.1(A).
[104] *Id.* 20-00-1.1.3(A)(1).
[105] *Id.* 20-00-1.1.5(A).
[106] *Id.* 20-00-1.1.6(F)(2).
[107] *Id.* 20-00-1.1.6(F)(3).
[108] *See Rhode Island Offshore Wind Public Participation Guide*, SPECIAL INITIATIVE ON OFFSHORE WIND 2 (2022), https://www.crmc.ri.gov/windenergy/overview/RI_OSW_Participation_Guide.pdf.
[109] *See* 250 R.I.C.R. 150-10-1; *see also* SPECIAL INITIATIVE ON OFFSHORE WIND, *supra* note 108.
[110] *See* 250 R.I.C.R. 150-05-1.15(A)(3); *see also* SPECIAL INITIATIVE ON OFFSHORE WIND, *supra* note 108, at 2.
[111] R.I. GEN. LAWS § 42-17.4-12; *see also* SPECIAL INITIATIVE ON OFFSHORE WIND, *supra* note 108, at 2.
[112] 250 R.I.C.R. 150-05-1.17(D); *see also* SPECIAL INITIATIVE ON OFFSHORE WIND, *supra* note 108, at 2.
[113] Ocean Special Area Management Plan, 650 R.I.C.R. 20-05-11.3(E), 20-05-11.8(A)(2) (describing the FAB's involvement in decision-making processes, particularly advising on "the potential adverse impacts of offshore development on commercial and recreational fishermen and fisheries activities . . . ."); *see also* 650 R.I.C.R. 20-05-11.3(G) (defining the Habitat Advisory Board, which may be another helpful example of further consultation and collaboration within Rhode Island's permitting framework).
[114] Ocean Special Area Management Plan, 650 R.I.C.R. 20-05-11.3(E).
[115] *Id.* 20-05-11.10.5(C)(1)(h).

Notably, actors in the United Kingdom have employed boulder relocation policies and practices that may serve as useful models in the United States. It is worth noting that, in the United Kingdom, the Crown Estate maintains rights to the seabed surrounding England, Wales, and Northern Ireland and oversees leasing for offshore projects in those areas.[116] While the Crown Estate's functions may differ from BOEM's, the general policies are nonetheless generally applicable. Regarding general practices industry actors utilize, some developers employ an in-house fisheries liaison officer (FLO) (or "Company Fishing Liaison Officer (CFLO)").[117] A FLO's role is to maintain relevant contacts with the fishing industry and ensure open, transparent communication between the developer and the local fishing community.[118] Among other responsibilities, FLOs help advise developers on settlements when impacts cannot be avoided so developers may compensate fishers if their businesses suffer due to the project.[119] These settlements are based on factors like the importance of fishing in the area affected, the cost of gear relocation or removal, accessibility to similar fishing areas, and others.[120] The in-house nature of FLOs may help fishers and other concerned stakeholders in the United States have a more focused and direct channel for their interests and opinions. Some developers in the United States have hired FLOs,[121] though the practice appears more standard in Scotland and can be further explored in Rhode Island.

Additionally, industry members in Ireland have exemplified a different approach to fishers' involvement, which is a notable example of early and cooperative cross-industry collaboration in offshore energy development. In 2022, the Killybegs Fisherman's Organisation (KFO), along with local port operations outfit Sinbad Marine, signed a Memorandum of Understanding with Swedish developer Hexicon AB.[122] This document prescribes the inclusion of the KFO on decisions regarding site selection, cable routing, and landfall in Hexicon's project off the Donegal coast.[123] Within the memorandum, the parties also agreed to include environmental organizations' input to help inform the design and location of the project.[124] Hexicon refers to this approach as a "mutually beneficial" solution that provides fishers and developers with an efficient way to share questions, information, and concerns early in the pre-construction process.[125] This approach presents a potentially advantageous approach to cross-industry collaboration in Rhode Island.

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116 *The Crown Estate: Energy Minerals and Infrastructure Portfolio: The Crown Estate's role in the development of Offshore Renewable Energy*, THE CROWN EST. 1 (May 2017), https://www.thecrownestate.co.uk/media/2456/tce-role-and-responsibility-in-offshore-developments_final_may-2017.pdf.

117 *FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds*, FISHING LIAISON WITH OFFSHORE WIND AND WET RENEWABLES GRP. 7 (2015), https://www.thecrownestate.co.uk/media/1776/floww-best-practice-guidance-disruption-settlements-and-community-funds.pdf.

118 *See id.* at 5-7.

119 *Id.*

120 *Id.* at 9.

121 *See, e.g.*, TOWN OF E. HAMPTON & SOUTH FORK WIND, LLC, HOST COMMUNITY AGREEMENT 4 (2021), https://climate.law.columbia.edu/sites/climate.law.columbia.edu/files/content/CBAs/05.%20East%20Hampton%20Executed.pdf.

122 *See* Press Release, Hexicon, Fishing industry and Hexicon unveil historic collaboration (June 26, 2022), https://storage.mfn.se/9605d6f1-d321-41bd-a210-4d660de53449/fishing-industry-and-hexicon-unveil-historic-collaboration.pdf.

123 *Id.* at 1.

124 *Id.*

125 *Id.*

Another potential mechanism to engage fishers in the development of offshore energy projects is a Community Benefits Agreement (CBA), or "[a] legally binding contract[] between developers and host municipalities and/or local community groups that can serve to mitigate local impacts of large infrastructure projects and other types of development."[126] CBAs can provide mutual benefits to developers and impacted communities, such as fishers, typically in the form of monetary and non-monetary benefits for the community and community support and heightened likelihood of regulatory approvals for the developer.[127] A CBA may be useful in the boulder relocation context because it can provide fishers and developers the opportunity to agree on certain aspects of the offshore energy development. For example, the Town of East Hampton, New York, entered into a CBA with South Fork Wind, LLC that established a variety of compensation measures and included the hiring of a fisheries liaison,[128] or a FLO as more commonly seen in Scotland. A CBA could also incorporate provisions to include fishers in early conversations, such as where to place relocated boulders. Members of Rhode Island's commercial fishing industry may explore entering into CBAs with offshore energy developers to address concerns and ideas, such as artificial reefs.

Conclusion

There are still many questions surrounding the mitigation of boulder relocation's effects on both fishing communities and the local environment. In the United States, environmental agencies can review and regulate boulder relocation through both federal and state permitting processes. Some state policymakers have suggested that developers could co-locate boulders to mitigate effects while also benefiting the physical structure of an offshore project,[129] which may include an artificial reef. One potential question with this strategy is how efficiently it could be permitted. Strategies to involve fishers early in the pre-construction period of a project could prove beneficial to all parties interested in and involved with the project. Other countries, namely England, Scotland, and Northern Ireland, have exemplified alternative approaches to cross-industry collaboration, which states in the United States may seek to mimic.[130]

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[126] *Communities Benefits Agreements Database*, COLUM. L. SCH. SABIN CTR. FOR CLIMATE CHANGE L., https://climate.law.columbia.edu/content/community-benefits-agreements-database (last visited Sep. 2, 2025).
[127] *Id.*
[128] TOWN OF E. HAMPTON & SOUTH FORK WIND, LLC, *supra* note 121, at 4 ("Developer, or a Related Party, shall employ an individual to facilitate communication from time to time between Developer and members of the [local] commercial fishing community until such time as the Wind Farm ceases commercial operations.").
[129] *Mass. CZM Framework*, *supra* note 2; ME. OFFSHORE WIND INITIATIVE, *supra* note 15, at 92.
[130] *See generally* FISHING LIAISON WITH OFFSHORE WIND AND WET RENEWABLES GRP., *supra* note 117; Hexicon, *supra* note 122.