EXPLORING OPTIONS FOR GRANTING PROPERTY RIGHTS TO OFFSHORE AQUACULTURE OPERATIONS IN THE EXCLUSIVE ECONOMIC ZONE

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I. INTRODUCTION

Aquaculture is an industry that is poised to experience substantial growth both globally and in the United States in the coming years and decades. As the U.S. in particular considers how to most efficiently manage finite natural resources to ensure food security, some look to the Nation's vast ocean territory as a place with considerable potential to expand domestic production. While aquaculture operations are common in state waters, there are currently no commercial operations in the federal waters of the U.S. Exclusive Economic Zone (EEZ).

Development of commercial aquaculture facilities in the EEZ is hampered by several factors, including an unclear regulatory process in offshore federal waters and access to financing.[2] In fact, the National Oceanic and Atmospheric Administration (NOAA) has identified regulatory uncertainty as a major barrier to the development of offshore aquaculture in the United States.[3] Congress has yet to enact any legislation that specifically authorizes or delineates the permitting process for aquaculture projects sited in federal waters, which begin where state

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[2] HAROLD F. UPTON & EUGENE H. BUCK, CONG. RSCH. SERV., OPEN OCEAN AQUACULTURE 2 (2010), https://crsreports.congress.gov/product/pdf/RL/RL32694.

[3] *National Ocean Policy Study: Hearing on Offshore Aquaculture Before the Subcomm. on Nat'l Ocean Pol'y Study of the S. Comm. on Com., Sci., & Transp.*, 109th Cong. 3 (2006) (statement of Dr. William T. Hogarth, Assistant Admin. for Fisheries, Nat'l Marine Fisheries Serv., Nat'l Oceanic and Atmospheric Admin., U.S. Dep't of Com.).

waters end, generally 3 nautical miles (nm) from the coast, and extend to 200 nm offshore. This lack of aquaculture-specific legislation has created a confusing overlap of statutes for offshore aquaculture in the U.S. This uncertainty has long-reaching implications and is often cited as one of the main barriers to commercial investment, as it makes it difficult for operators to estimate profitability and secure financing.[4]

In addition to this regulatory uncertainty, prospective investors of offshore aquaculture operations may be deterred by the risk associated with operating in exposed open ocean locations, the risk of catastrophic events (e.g., severe storms), and high start-up costs.[5] Proponents of open ocean aquaculture development assert that without some form of long-term leasing of the water surface, water column, and seabed, open ocean aquaculture will have significant problems in securing capital from traditional funding sources and obtaining suitable insurance on the capital investment and stock.[6] Therefore, federal legislation concerning offshore aquaculture will likely need to clarify not only permitting and authority, but also offshore aquaculturists' property rights in the EEZ.[7]

There are multiple, non-exclusive options for authorizing offshore aquaculture's use of marine space, such as leases, licenses, easements, and permits. Each option has different strengths and weaknesses with respect to addressing the needs of industry, regulators, and the public on whose behalf the federal government manages offshore waters.

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This article proceeds in Part II by detailing the respective international, federal, and state legal frameworks applicable to aquaculture farms in the U.S. EEZ. Part III recounts and explains fundamental principles of property law that frequently arise in the conversation surrounding authorization mechanisms for

[4] UPTON & BUCK, *supra* note 2.
[5] *Id.* at 4.
[6] *Id.* at 4-5.
[7] *See id.* at 5.

marine aquaculture. Part IV explores the authorization mechanisms that have already been developed for other commercial activities involving the long-term use of federal lands, while Part V surveys authorization schemes that have been developed for marine aquaculture by state governments around the U.S. Next, Part VI examines foreign approaches to authorizing marine aquaculture, including those taken by two of the world's biggest aquaculture-producing nations, Norway and Chile. Part VII identifies the current federal framework for aquaculture operations in the U.S. EEZ. Part VIII, in turn, reviews proposals that are currently under consideration—either by the U.S. Congress or by the academic community—as to how offshore aquaculture in the U.S. should be authorized moving forward. Finally, Part IX discusses the applicability of the various models identified throughout this article to the federal authorization of offshore aquaculture, including lessons that can be learned therefrom.

II. INTERNATIONAL, FEDERAL, AND STATE FRAMEWORKS

In order to best chart the course for future authorizations of aquaculture activities in the EEZ, it is necessary to first understand the laws applicable to the use of U.S. ocean space. The waters in which offshore aquaculture operations are located are governed by intricate layers of state, federal, and international laws that constrain the types and methods of activities that national, subnational, and private entities can undertake or knowingly allow others to undertake in ocean waters. Awareness of these overlapping legal frameworks is also crucial for identifying the scope of each respective entities' authority—i.e., who has jurisdiction, where do they have it, and what they can regulate. Additionally, familiarity with these concentric frameworks is essential for identifying how to successfully pursue potential paths forward, as government entities will be unable to implement actions for which they lack proper legal authority or in ocean areas beyond their jurisdiction.

A. International Legal Framework Governing Ocean Space

Under the United Nations Convention on the Law of the Sea (UNCLOS), coastal nations are entitled to exercise varying levels of authority over a series of adjacent offshore zones.[8] Coastal nations may claim a territorial sea extending twelve nautical miles (nm) from their respective shores, and they may exercise full sovereignty in these territorial waters. In addition to the twelve nm territorial

[8] United Nations Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397 (entered into force Nov. 16, 1994) [hereinafter UNCLOS].

sea, UNCLOS affords every coastal nation the right to establish a contiguous zone from the outer edge of the territorial sea to a maximum of twenty-four nm from their respective shorelines.[9] This zone exists to bolster coastal nations' law enforcement capacity, particularly by preventing criminals from escaping accountability by fleeing the territorial sea.[10] Within the contiguous zone, coastal nations have the right to both prevent and punish infringement of fiscal, immigration, sanitary, and customs laws.[11] Unlike the territorial sea, which includes the water column, the contiguous zone only provides eligible nations with jurisdiction over the ocean's surface and floor.[12]

In addition to a contiguous zone, nations may claim an "exclusive economic zone," or EEZ, extending from twelve nm to 200 nm from a nation's coast.[13] In the EEZ, which includes the ocean's surface and the water column, nations have the sovereign right to explore, exploit, conserve, and manage the marine resources of and assert jurisdiction over: (i) the establishment and use of artificial islands, installations and structures; (ii) marine scientific research; and (iii) the protection and preservation of the marine environment.[14]

The EEZ substantially overlaps with another offshore area of significance in international law: the continental shelf. International law defines a nation's continental shelf as the seabed and subsoil of the submarine areas that extend beyond either "the natural prolongation of [a coastal nation's] land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance."[15] In fact, the continental shelf may extend up to 350 nm under certain conditions.[16] A nation may claim sovereign rights to explore and exploit the natural resources of its continental shelf.[17] Taken together, these provisions grant coastal nations

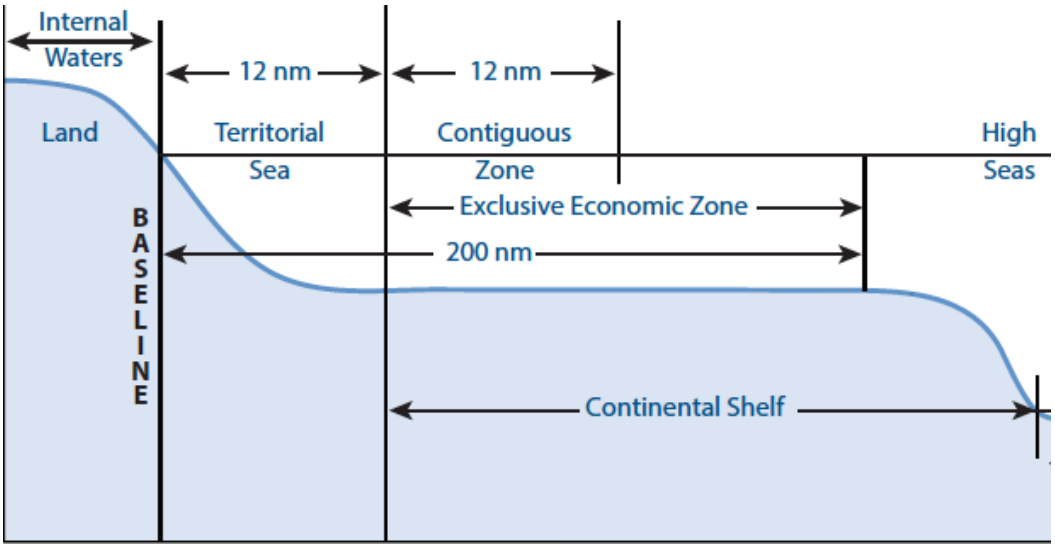
[9] *Id.* at Art. 33; FLETCHER SCH. OF LAW & DIPLOMACY AT TUFTS UNIV., LAW OF THE SEA: A POLICY PRIMER 11-12 (John Burgess et al. eds., 2017) [hereinafter A POLICY PRIMER], https://sites.tufts.edu/lawofthesea/files/2017/07/LawoftheSeaPrimer.pdf.
[10] *Id.* at 12.
[11] *Id.*
[12] *Id.*
[13] UNCLOS, *supra* note 8, at Art. 57.
[14] *Id.* at Art. 56.1.
[15] *Id.* at Art. 76.1.
[16] *Id.* at Art. 76.4-76.7.
[17] *Id.* at Art. 77.

authority to control activities occurring not only on and below the seafloor, but also on surface waters and in the water column where appropriate as well.

The U.S. signed UNCLOS but never ratified it, meaning the U.S. is not a party to the treaty and its provisions are not binding on the federal government.[18] Nevertheless, the U.S. recognizes many of UNCLOS's provisions as customary international law[19] and has claimed offshore zones that are practically identical to those described in UNCLOS through a series of executive orders. In 1945, President Truman asserted federal authority over the continental shelf contiguous to U.S. coasts.[20] President Reagan subsequently claimed a 200-nm EEZ through Proclamation No. 5030 in 1983,[21] and similarly proceeded to extend the U.S. territorial sea to twelve nm through Proclamation No. 5928 in 1988.[22] President Clinton, in turn, issued a Presidential Proclamation in 1999 that established a contiguous zone extending twenty-four nm from U.S. shores.[23]

[18] RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW OF THE UNITED STATES, § 301(1) (AM. LAW INST. 1987).
[19] *See* U.S. v. Alaska, 503 U.S. 569, 588 n.10 (1992).
[20] Policy of the United States with Respect to the Natural Resources of the Subsoil and Sea Bed Continental Shelf, Proclamation No. 2667, 10 Fed. Reg. 12,305 (Sept. 28, 1945), https://www.gc.noaa.gov/documents/gcil_proc_2667.pdf.
[21] Exclusive Economic Zone of the United States of America, Proclamation No. 5030, 48 Fed. Reg. 10,605 (Mar. 14, 1983).
[22] Proclamation No. 5928, 54 Fed. Reg. 777 (Dec. 27, 1988), https://www.govinfo.gov/content/pkg/STATUTE-103/pdf/STATUTE-103-Pg2981.pdf .
[23] Proclamation No. 7219, 64 Fed. Reg. 48,701 (Sept. 8, 1999), https://www.govinfo.gov/content/pkg/FR-1999-09-08/pdf/99-23460.pdf.

FIG. 1 - ZONES OF MARINE JURISDICTION UNDER U.S. AND INTERNATIONAL LAW[24]



B. Federal Framework

Various federal statutes also refer to these ocean jurisdictional zones and, in some cases, define them. For example, the Outer Continental Shelf Lands Act (OCSLA), which is the primary federal law governing offshore oil and gas development, defines the outer continental shelf (OCS) as "all submerged lands lying seaward and outside of the areas [...] [under state control] and of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control […]."[25] The Energy Policy Act of 2005 subsequently amended the OCSLA to allow leasing of the OCS for offshore wind energy production and resolved uncertainties regarding the permitting of such projects.[26] Congress has elsewhere explicitly invoked its authority to manage fauna, flora, and other aquatic life in the EEZ, such as in the Magnuson-Stevens Fishery Conservation and Management Act and its reauthorizations.[27]

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[24] *See* A POLICY PRIMER, *supra* note 9, at 11. Graphic provided courtesy of Law of the Sea: A Policy Primer project, The Fletcher School of Law and Diplomacy, Tufts University. Copyright 2017 Tufts University, all rights reserved.

[25] 43 U.S.C. § 1331(a).

[26] Joseph B. Nelson & David P. Yaffe, *The Emergence of Commercial Scale Offshore Wind: Progress Made and Challenges Ahead*, 10 SAN DIEGO J. CLIMATE & ENERGY L. 25, 31 (2019).

[27] 16 U.S.C. § 1801(2)(b).

FIG. 2 - U.S. OUTER CONTINENTAL SHELF

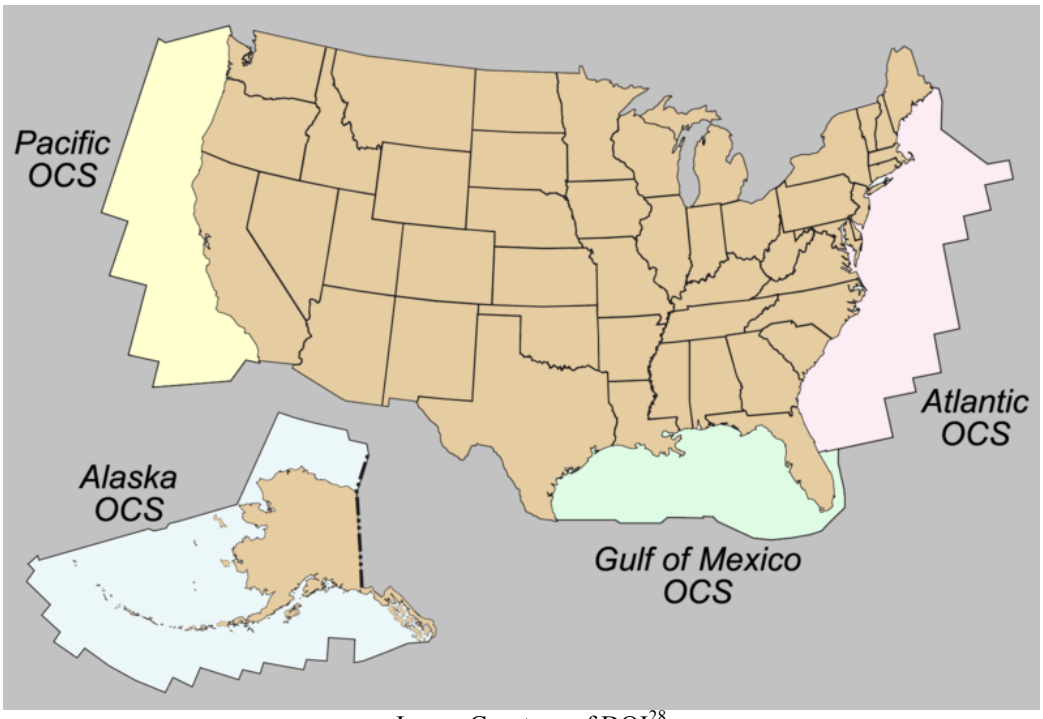

Image Courtesy of DOI[28]

In 1953, Congress passed the Submerged Lands Act (SLA), which generally recognizes coastal states' jurisdiction over the waters extending three nm from shore.[29] Due to a decision of the Supreme Court of the United States, the jurisdictions of Texas and Florida both extend nine nm into the Gulf of Mexico because each state had claimed an extended boundary prior to joining the Union.[30] Within their offshore boundaries, states have "(1) title to and ownership of the lands beneath navigable waters within the boundaries of the respective states, and (2) the right and power to manage, administer, lease, develop and use the said lands and natural resources [...]."[31] Coastal states are thus vested with the

[28] MINERALS MGMT. SERV., ASSESSMENT OF UNDISCOVERED TECHNICALLY RECOVERABLE OIL AND GAS RESOURCES OF THE NATION'S OUTER CONTINENTAL SHELF (2006), https://www.boem.gov/sites/default/files/uploadedFiles/BOEM/Oil_and_Gas_Energy_Program/Resource_Evaluation/Resource_Assessment/2006NationalAssessmentBrochure%283%29.pdf.
[29] 43 U.S.C. § 1301(b).
[30] *Id.* at §§ 1312, 1301(b); *see also* United States v. Louisiana, 363 U.S. 1, 66 (1960).
[31] 43 U.S.C. § 1311.

discretion to decide for themselves how to regulate aquaculture within their jurisdictional waters. As a result, there are effectively thirty different frameworks that govern aquaculture occurring within three nm of U.S. shores.

TABLE 1 - OFFSHORE JURISDICTIONS IN NAUTICAL MILES (NM) FROM THE COAST

State Waters	● Most U.S. states = 3 nm ● TX and FL Gulf Coast = 9 nm
Federal Waters	● Territorial Sea = 3 to 12 nm ● Contiguous zone = 12 to 24 nm ● EEZ = 12 to 200 nm ● Continental shelf can extend up to 350 nm
International Waters (High Seas)	● More than 200 nm (unless the EEZ is less than 200 nm)

C. State Frameworks

The SLA abrogated the U.S. Supreme Court's 1947 decision in *U.S. v. California*,[32] which held that the federal government had paramount authority over the navigable waters, submerged lands, and resources therein that are seaward of the ordinary low water mark.[33] Coastal states were eager to nullify the decision because they had controlled the seabed without dispute by the federal government until 1937.[34] The states' authority over the seabed and other marine resources off their coasts is derived from the Public Trust Doctrine (PTD).[35]

The PTD is a principle with roots in ancient Roman law.[36] The Institutes of Justinian, a sixth century codification of Roman civil law, declares, "By the law of nature these things are common to all mankind – the air, running water, the sea, and consequently the shores of the sea."[37] This was traditionally interpreted

[32] 322 U.S. 19.
[33] DAVID C. SLADE ET AL., COASTAL STATES ORG., INC., PUTTING THE PUBLIC TRUST DOCTRINE TO WORK 315 (2d ed. 1997), https://shoreline.noaa.gov/docs/8d5885.pdf.
[34] NAT'L OCEANIC AND ATMOSPHERIC ADMIN., SUMMARY OF LAW: SUBMERGED LANDS ACT, https://coast.noaa.gov/data/Documents/OceanLawSearch/Summary%20of%20Law%20-%20Submerged%20Lands%20Act.pdf (last visited Aug. 12, 2021).
[35] *See* David L. Callies, *The Public Trust Doctrine*, 8 BRIGHAM-KANNER PROP. RTS. CONF. J. 71, 73 (2019).
[36] *See* J.B. Ruhl & Thomas A.J. McGinn, *The Roman Public Trust Doctrine: What Was It, and Does It Support an Atmospheric Trust?*, 47 ECOLOGY L. Q. 117, 121 (2020).
[37] J. INST. 2.1.1, *in* THE INSTITUTES OF JUSTINIAN, WITH NOTES 67 (Thomas Cooper ed. & trans., 3d ed. 1852).

as imposing upon a sovereign the obligation to create and preserve public rights of access and use of tidal waterways and their shores, including oceans, bays, and tidal rivers, especially for purposes of navigation, fishing, and commerce.[38] The tenets of the PTD were maintained through English common law and inherited by the original thirteen colonies after the Revolution, when the rights to tidal waterways and their shores—which were previously reserved to the Crown—passed to the newly created American states.[39] All other states acquired ownership of the beds and banks of these waters upon their statehood as a result of the Equal Footing Doctrine, under which all subsequent states were admitted with the same rights as the original thirteen.[40] With this ownership came the PTD obligations that the original thirteen states incurred by gaining authority over Crown lands.[41] The PTD consequently guided implementation of the SLA and continues to predominate the coastal states' management of their waters and resources.

Although the application of the PTD varies based on each state's interpretation, the Supreme Court of the United States has repeatedly confirmed that the states do have public trust obligations, originally in the 1842 case *Martin v. Waddell* and perhaps mostly famously in *Illinois Central Railroad Co. v. Illinois*.[42] In *Illinois Central*, the Court outlined the contours of the PTD, stating that "the state holds title to the lands under the navigable waters" of the state "in trust for the people of the state" for the purposes of navigation, commerce, and fishing.[43] States may extend the PTD to more lands or more uses under their jurisdiction, but, at a minimum, must ensure that their stewardship of any additional lands or uses also meets the standards of *Illinois Central*.[44] Bound by this constraint, all states have interpreted their PTD rights and obligations in

[38] Ruhl & McGinn, *supra* note 36, at 117.
[39] *See* Charles F. Wilkinson, *The Headwaters of the Public Trust: Some Thoughts on the Source and Scope of the Traditional Doctrine*, 19 ENVTL. L. 425, 439 (1989).
[40] Robin Kundis Craig, *A Guide to the Western States' Public Trust Doctrines: Public Values, Private Rights, and the Evolution Toward an Ecological Public Trust*, 37 ECOLOGICAL L. Q. 53, 65 (2010); *see* Idaho v. United States, 533 U.S. 262, 272 (2001); *see also* Idaho v. Coeur d'Alene Tribe of Idaho, 521 U.S. 261, 283-84 (1997); United States v. Alaska, 521 U.S. 1, 5 (1997); Montana v. United States, 450 U.S. 544, 551 (1981); United States v. Holt State Bank, 270 U.S. 49, 55 (1926); Weber v. Bd. of Harbor Comm'rs, 85 U.S. (18 Wall.) 57, 65-66 (1873).
[41] Wilkinson, *supra* note 39, at 439.
[42] 146 U.S. 387 (1892).
[43] *Id.* at 452. The Court also prohibited states from transferring trust property unless it benefits the trust, such as through building wharves and docks.
[44] Crystal S. Chase, *The Illinois Central Public Trust Doctrine and Federal Common Law: An Unconventional View*, 16 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 113, 159 (2010).

different ways, resulting in individual, state-by-state legislative and judicial interpretations. As a result, no two state PTDs are the same.[45] How each state defines its PTD can have important implications regarding the leasing of eligible waters and submerged lands for aquaculture operations but, regardless of the doctrine's specific contours, every coastal state's conveyance of water and submerged land to private parties for aquaculture activities must be in furtherance of the public trust, as the Court required in *Illinois Central*.

D. Federal Public Trust?

While "[s]tate governments are well-established trustees under the PTD,"[46] application of the PTD to the federal government is an unsettled area of law.[47] In 2012, the D.C. Circuit Court of Appeals affirmed a lower court's interpretation of the Supreme Court of the United States's decision in *PPL Montana, L.L.C. v. Montana*,[48] as precluding application of the PTD to the federal government.[49] However, earlier federal district court opinions from other jurisdictions have explicitly applied the PTD to the federal government, albeit only *in dicta*. For example, a Massachusetts federal district court has observed that "the [PTD] […] is governmental and administered jointly by the state and federal governments by virtue of their sovereignty."[50]

Contrary to *PPL Montana*, the Supreme Court of the United States has elsewhere recognized public trust obligations in the federal government's management of public lands without explicitly invoking the PTD.[51] The U.S.

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[45] Taylor Goelz, *Does Private Aquaculture Benefit the Public? Development of Private Oyster Aquaculture Industries in Maryland and Virginia as Influenced by Different Scopes of the Public Trust Doctrine*, 10 SEA GRANT L. & POL'Y J. 2, 4 (2020.

[46] MICHAEL C. BLUMM & MARY CHRISTINA WOOD, THE PUBLIC TRUST DOCTRINE IN ENVIRONMENTAL AND NATURAL RESOURCES LAW 6 (1st ed. 2013).

[47] Erin Ryan, *A Short History of the Public Trust Doctrine and its Intersection with Private Water Law*, 38 VA. ENVTL. L.J. 135, 170-81 (2020).

[48] 565 U.S. 576 (2012).

[49] Alec L. v. Jackson, 863 F. Supp. 2d 11 (D.D.C. 2012), *aff'd sub nom.* Alec L. v. McCarthy, 561 F. App'x 7 (D.C. Cir. 2014), *cert. denied*, 574 U.S. 1047 (2014).

[50] United States v. 1.58 Acres of Land, 523 F. Supp. 120, 124 (D. Mass. 1981).

[51] Alabama v. Texas, 347 U.S. 272, 277 (1954) (Reed, J., concurring) ("The United States holds resources and territory in trust for its citizens in one sense, but not in the sense that a private trustee holds for [a private beneficiary]. The responsibility of Congress is to utilize the assets that come into its hands as sovereign in the way that it decides is best for the future of the Nation."); Light v. United States, 220 U.S. 523, 537 (1911) ("[a]ll public lands of the nation are held in trust for the people of the whole country."); United States v. Trinidad Coal

Department of Justice, on the other hand, disavows the existence of a federal PTD.[52] Debate over the existence and scope of a federal PTD is enjoying a renaissance due to its prominence in the *Juliana v. U.S.* climate change case that has recently captured headlines.[53] Now, perhaps more than ever, there is no judicial or academic consensus regarding the existence or scope of the federal government's public trust obligations. Uncertainty abounds in the existing literature about whether the PTD applies to the federal government's management of the EEZ in particular.[54]

III. AUTHORIZATION OPTIONS - LEGAL BASICS

In order to engage in meaningful discussions regarding the options for authorizing the occupancy of federal offshore waters by aquaculture operations, it is important to have an accurate and informed understanding of the applicable legal terminology. Listed below are terms describing property interests that are likely to arise in such a discussion, as well as their respective definitions in the most recent edition of Black's Law Dictionary (11th ed. 2019).

- Lease: A contract by which a rightful possessor of real property conveys the right to use and occupy the property for life, for a fixed period, or for a period terminable at will, in exchange for consideration ("rent"); also termed "tenancy agreement."

- Easement: An interest in land owned by another person, consisting in the right to use or control the land, or an area above or below it,

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& Coking Co., 137 U.S. 160, 170 (1890) ("the [federal] government should not be regarded as occupying the attitude of a mere seller of real estate for its market value. […] [These lands] were held in trust for all the people […].").

[52] *See* BLUMM & WOOD, *supra* note 46, at 338 ("[T]he Department of Justice, representing the federal government, resists mightily any public trust duty in litigation.").

[53] *See* Rachael McDonald, *After Six Years, Teen Climate Suit Could End In Settlement*, KLCC (May 13, 2021), https://www.klcc.org/post/after-six-years-teen-climate-suit-could-end-settlement; John Schwartz, *Court Quashes Youth Climate Change Case Against Government*, N.Y. TIMES (Jan. 17, 2020), https://www.nytimes.com/2020/01/17/climate/juliana-climate-case.html.

[54] *See* Kenneth R. L. Parker, *Fishing for the Public Trust Doctrine: The Search for a Legal Framework to Govern Open Ocean Aquaculture in America's Federal Waters*, 4 NE. U. L.J. 209, 235 (2012); Hope M. Babcock, *Grotius, Ocean Fish Ranching, and the Public Trust Doctrine: Ride 'Em Charlie Tuna*, 26 STAN. ENVTL. L.J. 3, 76 (2007); Kevin J. Lynch, *Application of the Public Trust Doctrine to Modern Fishery Management Regimes*, 15 N.Y.U. ENVTL. L.J. 285, 295 (2007).

> for a specific limited purpose (such as to cross it for access to a public road). […] Unlike a lease or license, an easement may last forever, but it does not give the holder the right to possess, take from, improve, or sell the land.
>
> - Right-of-way: The right to pass through property owned by another. A right-of-way may be established by contract, by longstanding usage, or by public authority (as with a highway).
>
> - License:
>   - A privilege granted by a state or city upon the payment of a fee, the recipient of the privilege then being authorized to do some act or series of acts that would otherwise be impermissible. A license in this sense is a method of governmental regulation exercised under the police power, as with a license to drive a car, operate a taxi service, keep a dog in the city, or sell crafts as a street vendor. — Also termed *permit*.
>
>   - A permission, us[ually] revocable, to commit some act that would otherwise be unlawful; esp., an agreement (not amounting to a lease or profit à prendre) that it is lawful for the licensee to enter the licensor's land to do some act that would otherwise be illegal, such as hunting game. See *servitude*.
>
> - Permit: A certificate evidencing permission; an official written statement that someone has the right to do something; *see* license.

Perhaps the single foremost matter of interest and contention in the conversation surrounding property rights for commercial aquaculture operations in the EEZ is whether a lease or a permit is the preferable instrument. As noted below, many states require aquaculture facilities in state waters to obtain a lease and permits, whereas the federal government currently uses only permits to authorize aquaculture operations in eligible waters. Permits and leases differ most substantially in the rights they give to the permittee and the lessee.[55] More

[55] MILES & STOCKBRIDGE, *License vs. Lease: Legal Concerns of Co-Working Spaces*, MSLAW BLOG (July 11, 2017), https://www.mslaw.com/mslaw-blog/license-vs-lease-legal-concerns-of-co-working-spaces.

specifically, a permit merely grants a privilege to use the land in a specific manner; absent any provisions to the contrary, the permitter owes no duty to the permittee beyond providing the space and allowing the permittee to perform the acts outlined in the permit.[56] Leases operate differently. A lease is a contract between the lessor and the lessee that typically gives the lessee possession of the property being leased.[57] Moreover, a lease can transfer the lessor's entire interest in the property—and all rights that come with that interest—to the lessee for the duration of the lease.[58]

These principles work slightly differently when it comes to offshore aquaculture, specifically because the permitter or lessor in question is a government entity. The terms of a permit or lease issued by a government entity are constrained by the obligations that are uniquely imposed on government entities by the U.S. Constitution and respective state constitutions, as well as other background legal principles like the PTD. As a result, government entities involved in permitting or leasing for offshore aquaculture may be barred from conveying certain interests or rights to the permittee or lessee, usually as a result of the need to meet minimum stewardship requirements or accommodate other activities that are already entitled to use of the space. Finally, it should be noted that leases and permits would not be mutually exclusive in this context. Should Congress choose to create a federal leasing mechanism for aquaculture operations in the EEZ, operators would presumably still need to successfully complete any other applicable permitting and regulatory processes required by the current framework, which are discussed in more detail below.

IV. CURRENT FEDERAL FRAMEWORK FOR OFFSHORE AQUACULTURE

Equipped with an accurate and comprehensive understanding of the relevant legal terminology, this article can now dive into the federal government's current approach to authorizing aquaculture operations in the U.S. EEZ. Recounting the full framework is imperative for identifying its shortcomings, particularly with respect to any spatial authorizations—or a lack thereof—that may be inhibiting the growth of commercial aquaculture activities in the EEZ.

[56] *Id.*
[57] *Id.*
[58] *Id.*

A. Environmental Protection Agency

The Environmental Protection Agency (EPA) is currently the lead federal permitting agency for offshore finfish aquaculture activities through its authority under the Clean Water Act (CWA).[59] The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[60] To achieve this goal, the CWA makes unlawful "any discharge of any pollutant" without a permit[61] and confers broad authority on the EPA to protect water quality by regulating discharges of pollutants into the Nation's waters.[62] More specifically, the EPA administers the National Pollutant Discharge Elimination System (NPDES), which is the relevant permitting program under the CWA for discharges into federal ocean waters. "Discharge" is limited to, in relevant part, "any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft."[63] Thus, aquaculture operations in federal ocean waters must obtain a NPDES permit to discharge pollutants, unless they are deemed a "vessel or other floating craft" by the EPA.[64]

Discharges from aquaculture operations are primarily governed by the implementing regulations of CWA Sections 402 and 403. The CWA Section 402 authorizes the EPA to issue NPDES permits for the discharge of pollutants from point sources into waters of the United States, including all ocean waters out to

[59] The U.S. Army Corps of Engineers also has authority under CWA § 404, which is discussed in greater detail below in Part IV(B).
[60] 33 U.S.C. § 1251(a). This includes broad coverage of activities involving the "propagation of fish, shellfish, and wildlife." *Id.*
[61] *Id.* § 1311(a).
[62] HARVARD LAW SCH. EMMETT ENVTL. LAW & POLICY CLINIC, ET AL., OFFSHORE AQUACULTURE REGULATION UNDER THE CLEAN WATER ACT 4 (2012) [hereinafter OFFSHORE AQUACULTURE REGULATION], http://eli-ocean.org/wp-content/blogs.dir/3/files/CWA-aquaculture.pdf.
[63] 33 U.S.C § 1362(12)(B).
[64] *See id.* § 1362(10) (defining "ocean" as "any portion of the high seas beyond the contiguous zone"). Discharges of pollutants from vessels are regulated by EPA through other provisions of the CWA. For example, Section 312 of the CWA (33 U.S.C. § 1322) sets out the principal framework for regulating sewage discharges from vessels. Incidental discharges from vessels into federal waters and the contiguous zone are regulated jointly by the EPA and the U.S. Coast Guard as set forth in the Incidental Vessel Discharge Act (Title IX of the Frank LoBiondo Coast Guard Authorization Act of 2018, S. 140, Pub. Law 115-282).

200 miles from the coast.[65] The CWA Section 402 requires that a NPDES permit for a discharge into federal waters of the ocean be issued in compliance with the EPA's ocean discharge criteria within CWA Section 403 for preventing unreasonable degradation of the receiving waters (i.e., 40 C.F.R. Section 125.121). Potential pollutant discharges from finfish aquaculture operations include solids, nutrients, ammonia, fish waste, feed waste, pharmaceuticals, chemicals, and other industrial animal-processing byproducts.[66] As a result, finfish aquaculture facilities in offshore federal waters require a NPDES permit because they discharge pollutants from a point source into waters of the United States and, therefore, are subject to the general CWA Section 301 prohibition against discharges unless authorized by a NPDES permit.[67] Notably, the EPA applied this reasoning to reach its conclusion that offshore shellfish aquaculture operations do not require a permit under CWA § 402 in light of the agency's determination that molluscan shellfish aquaculture operations do not discharge enough pollutants to trigger the need for a NPDES permit.[68] Offshore seaweed aquaculture operations are presumably exempt from needing a NPDES permit by the same logic, although the EPA has not yet officially issued a decision on the matter.

Relevant to offshore aquaculture, the CWA implements NPDES regulations relating to concentrated aquatic animal production (CAAP) facilities,[69] and requires technology-based effluent limitations for certain discharges of pollutants from CAAP facilities. CAAP facilities include cold-water facilities that discharge at least thirty days per year, produce more than 20,000

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[65] *NPDES Permit Basics*, EPA (Aug. 3, 2020), https://www.epa.gov/npdes/npdes-permit-basics.

[66] *See* U.S. Pub. Int. Rsch. Grp. v. Atl. Salmon of Maine, LLC., 215 F. Supp. 2d 239, 247-49 (D. Me. 2002).

[67] U.S. ENVTL. PROT. AGENCY, DRAFT ENVIRONMENTAL ASSESSMENT (EA): NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND RIVERS AND HARBOR ACT SECTION 10 PERMIT FOR KAMPACHI FARMS – VELELLA EPSILON (VE) OFFSHORE AQUACULTURE PROJECT 3 (2019) [hereinafter DRAFT EA], https://www.epa.gov/sites/production/files/2019-08/documents/velella_environmental_assessment_draft.pdf.

[68] EPA, Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category, 69 Fed. Reg. 51,891, 51,906 (Aug. 23, 2004) (codified at 40 C.F.R. pt. 451) [hereinafter CAAP Standards], https://www.federalregister.gov/documents/2004/08/23/04-15530/effluent-limitations-guidelines-and-new-source-performance-standards-for-the-concentrated-aquatic; *see* Ass'n to Protect Hammersley, Eld, & Totten Inlets v. Taylor Res., Inc., 299 F.3d 1007 (9th Cir. 2002).

[69] 40 C.F.R. § 122.24.

pounds of fish per year, and use 5,000 pounds or more of feed per month, as well as warm-water facilities that discharge at least thirty days per year and produce at least 100,000 pounds of fish annually (not including closed ponds that discharge only during periods of excess runoff).[70] Accordingly, many commercial-scale offshore aquaculture facilities are likely to trigger the NPDES permitting requirement, but pilot-scale facilities and facilities producing small volumes will likely escape CWA coverage.[71]

NPDES permits are relatively straightforward authorization instruments. They have a duration of five years and may be modified, revoked and reissued, or terminated for cause. The EPA does not charge a fee for applying for or obtaining coverage under a NPDES permit,[72] nor does it require applicants or permittees to furnish a financial guarantee, such as a bond, or provide for revenue recovery from permitted activities. However, under the current NPDES framework for finfish aquaculture, applicants may be required to pay for a variety of surveys and studies relating to the project's siting and environmental impacts.[73] Additionally, NPDES permits must satisfy only the minimal procedural standards identified in the Administrative Procedure Act prior to being issued—i.e., the EPA must provide opportunity for a public hearing before issuing a permit, and this requirement is fulfilled in practice by public notice and comment in the Federal Register.

The EPA's permitting authority for finfish aquaculture has been put to the test in the Gulf of Mexico, where EPA serves as the lead agency for the permitting of Ocean Era's pilot-scale marine aquaculture facility in federal waters.[74] The permitting process for this project required coordination between the EPA and the U.S. Army Corps of Engineers, U.S. Coast Guard, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Department of Interior's Bureau of Ocean Energy Management and Bureau of Safety and Environmental Enforcement, in addition to state agencies entitled to review under the Coastal

[70] CAAP Standards, *supra* note 68, at 51896.
[71] OFFSHORE AQUACULTURE REGULATION, *supra* note 62, at 6.
[72] *NPDES Permit Basics, supra* note 65. However, many of the NPDES-authorized states do charge fees for permit applications, Notices of Intent, and/or permit coverage. *See id*.
[73] *See* Presentation, Kelly Lucas, Manna Fish Farms, Gulf of Mexico Finfish Farm Operations, https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Attachments%20By%20ParentFilingId/806C64E35B7E0B8A85258645004C0970/$FILE/Attachment%205%20-%20Manna%20Fish%20Farms%20Overview.pdf (last visited Aug, 4, 2021).
[74] *See id*. at 2.

Zone Management Act.[75] Like other NPDES permits, Ocean Era's permit would last for five years, and could be reissued in five-year cycles if it maintains compliance with the permit's terms.[76] Although approved by the EPA, Ocean Era's permit has been challenged through the EPA's Environmental Appeals Board (EAB). The appeal remains under review as of the time of this article's publication. The EAB will hear oral arguments in the appeal on November 4, 2021.[77]

B. Army Corps of Engineers[78]

The lead federal permitting agency for offshore shellfish culture operations in the United States is the U.S. Army Corps of Engineers (Corps). Under authority derived from Section 10 of the Rivers and Harbors Act (RHA), the Corps issues permits for obstructions "to the navigable capacity of any of the waters of the United States."[79] Corps regulations state that "the navigable waters of the United States over which Corps of Engineers' regulatory jurisdiction extends include all ocean and coastal waters within a zone three geographic (nautical) miles seaward from the baseline (the Territorial Seas)."[80] As a result, shellfish culture systems anchored to the seabed or structures built to support such operations in the EEZ would be an obstruction to navigation and need to obtain an RHA permit from the Corps.[81]

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[75] *See id.* at 6, 10.
[76] *Id.* at 3, 52.
[77] Order Consolidating Cases for Oral Argument and Decision and Scheduling Oral Argument, In re Ocean Era, Inc. – Velella Epsilon Facility (EAB Aug. 10, 2021), https://yosemite.epa.gov/OA/EAB_WEB_Docket.nsf/D325293EBAFBCA348525872D0050CE2E/$File/Order%20Setting%20Oral%20Argument%20in%20NPDES%20Appeal%20Nos.%2020-08%20%20and%2020-09%20(signed).pdf.
[78] Portions of this section were adapted from Catherine Janasie, *Army Corps Finalizes Nationwide Permits for Mariculture, But Will They Stand?*, 20: 2 THE SANDBAR 12 (Apr. 2021), http://nsglc.olemiss.edu/SandBar/pdfs/sandbar20.2.pdf, and AMANDA NICHOLS, NATL. SEA GRANT L. CENTER, SHELLFISH AQUACULTURE PERMITTING UNDER NATIONWIDE PERMIT 48 2-5 (2019), http://nsglc.olemiss.edu/projects/shellfish-aquaculture/files/nwp48.pdf.
[79] 33 U.S.C. § 403.
[80] 33 C.F.R. § 329.12(a).
[81] *See* Alliance to Protect Nantucket Sound, Inc. v. U.S. Dep't of Army, 288 F. Supp. 2d 64 (D. Mass. 2003) (concluding that the OCSLA extended the Corps § 10 authority "to all 'artificial islands, installations, and other devices located on the seabed, to the seaward limit of the [OCS],' including, but not limited to, those that 'may be' used to explore for, develop, or produce resources."), *aff'd*, Alliance to Protect Nantucket Sound, Inc. v. U.S. Dep't of Army, 398 F.3d 105 (1st Cir. 2005).

The Corps is authorized to issue permits under both Section 10 of the RHA and Section 404 of the Clean Water Act (CWA). RHA Section 10 requires permits for "structures"; for offshore aquaculture operations, this might include cages, nets, racks, lines, pilings, ropes, trays, and tubes placed in navigable waters.[82] Conversely, Section 404 of the CWA requires permits for "dredge and fill" activities.[83] The Corps has determined that aquaculture operations distributing shellfish seed and installing shellfish gear do not qualify as a "fill" requiring a Section 404 permit, but creating a suitable surface on which to grow shellfish by spreading gravel or shell without shellfish seed inside does qualify.[84] Other offshore aquaculture activities might also constitute a "dredge." Mechanical harvesting, for instance, could require a Section 404 permit if it goes beyond incidental fallback by collecting sediment and depositing it in a different location.[85]

In addition to individual permits issued on a project-by-project basis under the RHA and CWA, the Corps has developed and implemented Nationwide Permits (NWPs) to simplify and streamline the permitting process for certain projects determined to have minimal environmental impact. There are currently fifty-eight NWPs authorizing a wide variety of activities including mooring buoys, residential developments, utility lines, road crossings, mining activities, wetland and stream restoration activities, and commercial shellfish aquaculture activities.[86] The Corps renews and re-issues the NWPs every five years, "...to update them, and provide clarity and certainty for the regulated public while protecting the aquatic environment."[87] But individual permits, unlike NWPs, are not limited to a duration of five years.[88] The term of individual permits can vary, but it is typically between three and ten years.[89] Although NWPs authorize

[82] Janasie, *supra* note 78, at 12.
[83] 33 U.S.C. § 1244.
[84] Janasie, *supra* note 78, at 12.
[85] *Id*.
[86] 33 U.S.C. § 1251.
[87] Press Release, U.S. Army Corps of Eng'rs, Army Corps of Engineers Revises and Renews Nationwide Permits (Jan. 6, 2017), https://www.usace.army.mil/Media/News-Releases/News-Release-Article-View/Article/1043614/army-corps-of-engineers-revises-and-renews-nationwide-permits/.
[88] See 33 U.S.C. § 1344.
[89] *Wetlands and Streams – Clean Water Act Section 404 Permit*, N.C. DEPT. OF ENVTL. QUALITY (May 2020), https://files.nc.gov/ncdeq/Environmental%20Assistance%20and%20Customer%20Service/Permit%20Handbook%20Documents/2016_Revisions/Other-Section-404-Permit.pdf.

activities on a national level, Corps district commanders may revoke or add additional conditions to a NWP in a state or other geographic area for various reasons, including specific concerns regarding the adverse environmental impacts activities authorized by the permit could have on an area.[90] States also have some authority to prohibit the application of NWPs.[91] The exercise of these overlapping authorities can result in a patchwork of NWP coverage across the districts and states of the country.[92]

By their terms, NWPs do not grant property rights or other exclusive privileges, nor do they convey any right to exclude uninvited guests from the ocean space where the permitted activities are to occur. Rather, they merely allow the permittee to undertake the activities set forth in the permit (i.e., to build a structure in navigable U.S. waters). But because these permits are designed to allow for activities that can interfere with navigation, they are location-based and necessarily authorize occupancy of a particular area.

i. Shellfish - Nationwide Permit 48

The Corps has issued NWPs to authorize commercial shellfish operations. The most recent iteration of NWP 48 was finalized in January 2021.[93] The permit "authorizes the installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures into navigable waters of the United States."[94] Additionally, NWP 48 authorizes "discharges of dredged or fill materials into waters of the United States necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities."[95] However, NWP 48 does not authorize cultivation of nonindigenous species (unless that species has previously been cultivated in the body of water in question), cultivation of aquatic nuisance species, construction of attendant features,[96] the deposition of shell material back into waters of the United States as waste, or activities that directly impact more

[90] Nichols, *supra* note 78, at 5.
[91] *Id.*
[92] *Id.*
[93] Reissuance and Modification of Nationwide Permits, 86 Fed. Reg. 2,744, 2,787-2,802 (Jan. 13, 2021), https://www.federalregister.gov/documents/2021/01/13/2021-00102/reissuance-and-modification-of-nationwide-permits.
[94] WILLIAM H. GRAHAM JR., DECISION DOCUMENT NATIONWIDE PERMIT 48, U.S. ARMY CORPS OF ENG'RS (Jan. 4, 2021), https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll7/id/16842.
[95] *Id.*
[96] *Id.* (such as docks, piers, boat ramps, stockpiles, or staging areas).

than one half-acre of submerged aquatic vegetation without submitting a pre-construction notification to the Corps.

ii. Seaweed (NWP 55) and finfish (NWP 56)

The Corps issued its first nationwide permits for offshore seaweed aquaculture and offshore finfish aquaculture—respectively referred to as "seaweed mariculture" and "finfish mariculture" by the Corps—in January 2021.[97] While there are some minor differences between NWP 48, NWP 55, and NWP 56, the terms of the latter two are substantially similar to those of NWP 48 as discussed above.[98] NWP 55 is for seaweed mariculture operations, while NWP 56 is for finfish operations. Both NWP 55 and 56 only authorize structures, as opposed to authorizing any of the operational aspects of offshore aquaculture activities.[99] In particular, in response to comments received on the draft NWPs, NWP 56 "distinguishes the Corps authority to authorize the installation of finfish farm structures from the authority of the EPA, the U.S. Food & Drug Administration, and other agencies regulating finfish farming activities."[100] In addition, both NWP 55 and 56 allow for multi-trophic mariculture operations, meaning farms can cultivate a combination of seaweed, finfish, and shellfish.[101] Both NWPs also require permittees to submit a pre-construction notification (PCN) to the appropriate Corps District Engineer.[102] Finally, the permits only cover the RHA, as the Corps has taken the position that activities under either permit do not result in discharges that would trigger CWA Section 404 applicability.[103]

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[97] Reissuance and Modification of Nationwide Permits, *supra* note 93, at 2,804-12.
[98] *Id.*; *See* Natalie J. Reid & Robert M. Smith, *U.S. Army Corps Proposes New Nationwide Permits for Seaweed and Finfish Aquaculture in Coastal Waters and Updates the Existing Nationwide Permit for Shellfish Aquaculture*, LEXOLOGY (Aug. 21, 2020), https://www.lexology.com/library/detail.aspx?g=63fc58fc-f2f8-478d-8ff6-b9a1af990e5e; Natalie J. Reid & Robert M. Smith, *U.S. Army Corps Issues Nationwide Permits for Aquaculture*, K&L GATES (Jan. 15, 2021), https://www.klgates.com/US-Army-Corps-Issues-Final-Nationwide-Permits-for-Aquaculture-1-15-2021.
[99] Janasie, *supra* note 78, at 12.
[100] *Id.*
[101] Reissuance and Modification of Nationwide Permits, *supra* note 93, at 2,864.
[102] *Id.* at 2,864-65.
[103] *Id.* at 2,851-52.

C. National Marine Fisheries Service

The National Marine Fisheries Service (NMFS), a branch of NOAA, claimed authority to regulate aquaculture under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) as early as 1993,[104] but this position has recently suffered setbacks in court. The MSA regulates fishing in the EEZ through development and implementation of federal fishery management plans (FMPs) created and implemented by eight regional fishery management councils (FMCs).[105] Under the MSA's authority, NMFS and several FMCs have attempted to exercise regulatory oversight over offshore aquaculture.[106]

In 2009, the Gulf of Mexico Fishery Management Council (GMFMC) approved an aquaculture FMP that NMFS went on to issue as a final rule in 2016.[107] The plan authorized permits for up to 20 facilities to culture fish species native to the Gulf of Mexico, and approved facilities were limited to a combined total production of 64 million pounds per year.[108] The FMP also required applicants for aquaculture permits to acquire all other necessary federal permits prior to NMFS issuing the Gulf aquaculture permit.[109]

But no facilities were ever permitted under the Gulf aquaculture FMP. After NMFS finalized it as a rule in 2016, a coalition of fishing and public interest groups filed a lawsuit in the U.S. District Court for the Eastern District of Louisiana to prevent the plan from taking effect. The court ultimately held that NMFS exceeded its authority under the MSA when it adopted a regulatory scheme for aquaculture operations in the Gulf of Mexico on the basis that the agency's authority under the statute to regulate "fishing" and "harvesting" does not include aquaculture.[110] This decision was later affirmed by the U.S. Circuit

[104] Memorandum from Jay S. Johnson, NOAA Deputy General Counsel, and Margaret F. Hayes, NOAA Assistant General Counsel for Fisheries, to James W. Brennan, NOAA Acting General Counsel (Feb. 7, 1993); *see* Memorandum from Constance Sathre, Office of the General Counsel, to Lois Schiffer, NOAA General Counsel (June 9, 2011).
[105] *See* 16 U.S.C. §§ 1801 *et seq.*
[106] HAROLD F. UPTON, CONG. RSCH. SERV., U.S. OFFSHORE AQUACULTURE REGULATION AND DEVELOPMENT 14 (2019), https://crsreports.congress.gov/product/pdf/R/R45952.
[107] *See* Fisheries of the Caribbean, Gulf, and South Atlantic; Aquaculture, 81 Fed. Reg. 1,761, 1,762-1,800 (Jan. 13, 2016) (to be codified at 50 C.F.R. pts. 600, 622).
[108] *Id.* at 1,764.
[109] *Id.*
[110] Gulf Fishermens Ass'n v. Nat'l Marine Fisheries Serv., 341 F. Supp. 3d 632, 639-42 (E.D. La. 2018).

Court of Appeals for the Fifth Circuit,[111] which effectively precludes NMFS or the GMFMC from attempting to regulate aquaculture in the Gulf moving forward.

However, the Fifth Circuit's decision is not binding outside of its jurisdiction[112] and no other federal appeals courts have weighed in on NMFS's ability to regulate aquaculture under the authority conveyed to the agency by the MSA. NMFS, in turn, appears to be interested in testing the waters of this issue in other jurisdictions. In May 2021, the agency submitted a Draft Programmatic Environmental Impact Statement (DPEIS) for an aquaculture FMP first proposed by the Western Pacific Fishery Management Council in 2016,[113] and later hosted virtual meetings to receive public feedback on the DPEIS in June 2021.[114] But opponents will be unable to challenge the FMP in court until NMFS publishes it as a final rule in the Federal Register,[115] and it is currently unclear whether NMFS intends to do so or what the timeline for taking such action would be. As a result, the authority of NMFS and the regional fishery management councils to regulate offshore aquaculture under the MSA may remain in limbo for years, if not longer.

D. What's Missing? – No Leasing Mechanism

Even if Ocean Era proves successful in obtaining a NPDES permit for its offshore finfish aquaculture operation, it will be unable to obtain a lease for the lands and waters to which it will gain access for its Gulf facility. This is because the federal framework that is currently in place for aquaculture operations in the U.S. EEZ—i.e., permitting under Section 10 of the RHA and Sections 402 and 404 of the CWA—does not provide for a mechanism to lease federally held resources to aquaculture operations. From a legal perspective, this raises questions

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[111] Gulf Fishermens Ass'n v. Nat'l Marine Fisheries Serv., 968 F.3d 454 (5th Cir. 2020), *as revised* (Aug. 4, 2020).

[112] Chad Flanders, *Towards a Theory of Persuasive Authority*, 62 OKLA. L. REV. 55, 77 (2009) ("[T]he fact that a court in a different circuit has ruled one way does not mean that all the circuits have to rule that way; indeed, even if every other court has ruled one way, this does not mandate the outcome for the remaining circuit.").

[113] Environmental Impact Statements; Notice of Availability, 86 Fed. Reg. 24,616 (May 7, 2021), https://www.federalregister.gov/documents/2021/05/07/2021-09688/environmental-impact-statements-notice-of-availability.

[114] *Potential Aquaculture Management Program in the Pacific Islands*, NAT'L. MARINE FISHERIES SERV. PAC. REG'L OFFICE (June 10, 2021), https://www.fisheries.noaa.gov/action/potential-aquaculture-management-program-pacific-islands.

[115] *See* Gulf Restoration Network, Inc. v. Nat'l Marine Fisheries, Serv., 730 F. Supp. 2d 157, 173-74 (D.D.C. 2010).

about site control and exclusive use of the resources that the facility will utilize for operations, such as the seabed and the water column.

Numerous entities and articles recognize the lack of a federal offshore aquaculture legal framework as a barrier to industry growth.[116] For starters, a leasing system would be aquaculture operators' preferred method to convey the authorization of offshore aquaculture activities due to exclusivity and site control.[117] But, as noted above, it must be emphasized that the creation of a leasing mechanism for offshore aquaculture operations would not address concerns shared by industry and regulators alike about streamlining the process for authorizing farms in the EEZ; the leasing process would almost certainly need to be successfully navigated in addition to any applicable permitting schemes discussed above. Additionally, leases can include more responsibilities and provide more protection than permits or licenses, such as provisions consistent with state public trust obligations.[118] Moreover, the available legal literature posits that contract theories, such as the rights of restitution and rescission, can provide stronger security of investment for offshore leases.[119]

Clarification of offshore aquaculture's security of tenure is badly needed. Federal legislation would be needed to extend a lease to aquaculture operations in the EEZ, as occurred for oil and gas rigs and wind farms under the OCSLA. As federal legislators and other interested parties attempt to chart a path for the clarification or extension of property rights for offshore aquaculture operations moving forward, they may find it helpful to consider the property rights regimes

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[116] *See*, *e.g.*, Babcock, *supra* note 54, at 25; Robin Kundis Craig, *It's Not Just an Offshore Wind Farm: Combining Multiple Uses and Multiple Values on the Outer Continental Shelf*, 39 PUB. LAND & RESOURCES L. REV. 59, 90-91 (2018); Kristen L. Johns, *Farm Fishing Holes: Gaps in Federal Regulation of Offshore Aquaculture*, 86 S. CAL. L. REV. 681, 699-700 (2013); Elan Lowenstein, *Regulating the Blue Revolution: A Sea of Change for the United States' Offshore Aquaculture Industry or A Missed Opportunity for Increased Sustainability*, 26 U. MIAMI INT'L & COMP. L. REV. 473, 487-88 (2009); Melissa Schatzberg, *Salmon Aquaculture in Federal Waters: Shaping Offshore Aquaculture Through the Coastal Zone Management Act*, 55 STAN. L. REV. 249, 268-69 (2002).

[117] BILIANA CICIN-SAIN ET AL., RECOMMENDATIONS FOR AN OPERATIONAL FRAMEWORK FOR OFFSHORE AQUACULTURE IN U.S. FEDERAL WATERS 36 (2005); Jeremy Firestone et al., *Regulating Offshore Wind Power and Aquaculture: Messages From Land and Sea*, 35 ENV. L. REP.. 10,289, 10,303-04 (2005).

[118] CICIN-SAIN ET AL., *supra* note 117, at 36-37, 41 (proposing the leasing system should specify lease duration, exclusivity, and compensation.).

[119] Gail Oshernko, *New Discourses on Ocean Governance: Understanding Property Rights and the Public Trust*, 21 J. ENVTL. L. & LITIG. 317, 363-64 (2007).

that other entities have developed for offshore aquaculture and that the U.S. government has created for other commercial activities occurring on federally owned lands. Therefore, this article's next undertaking is a survey of relevant legal frameworks that might be able to provide examples of and guidance for an appropriate balance of secure tenure for operators and governments' obligations to the public.

V. EXISTING FEDERAL MODELS

There is a delicate balance between accommodating multiple uses—especially multiple commercial uses—of federal lands, which are generally held in trust on behalf of the American public, and encouraging the growth and physical security of an industry with such immense potential in terms of both financial lucrativeness and future generations' food security. In light of the unique property rights constraints imposed on federal lands in particular, the most appropriate comparisons for gauging the relative strength of property rights conferred by the current authorization scheme for aquaculture in the EEZ—and, potentially, for inspiring reform thereof—are the corresponding frameworks for other commercial activities occurring on federal lands, particularly submerged land.

A. Oil and Gas Leasing (OCSLA)

The U.S. Department of the Interior (DOI) oversees oil and gas leasing on the OCS under OCSLA, which was enacted in 1953. The statute calls for the creation of five-year programs that function as schedules of proposed leases.[120] After assessing the nation's energy needs and potential economic, social, and environmental impacts associated with development, the Secretary of the Interior prepares a program that identifies the timing, size, and general location of leasing activities.[121]

Section 8 of OCSLA and its implementing regulations establish the mechanics of the OCS oil and gas leasing process.[122] This multi-step process begins with the Director of the Bureau of Ocean Energy Management (BOEM) publishing a call for information and nomination regarding potential lease

[120] 43 U.S.C. § 1344(a), (e).
[121] *Id.*
[122] *See* 43 U.S.C. § 1337; 30 C.F.R. §§ 556.302-556.308.

areas.[123] The BOEM Director then considers all of the available information and performs an environmental analysis as required by the National Environmental Policy Act (NEPA) to create a list of recommended areas for leasing and any proposed lease stipulations.[124] After making its determinations, BOEM submits the list of recommended areas to the Secretary of the Interior and, upon the Secretary's approval, both publishes it in the Federal Register and submits it to the respective governors of states potentially affected by the proposed leases.[125]

The Secretary generally grants a lease to the highest bidder at the end of this process, but there are narrow exceptions to this rule.[126] Successful bidders must furnish a variety of up-front payments and performance bonds upon being granted a lease, and lease contracts may include additional provisions, such as a requirement to sell a certain amount of production to small or independent refiners.[127] If lessees plan on engaging in exploration for oil and gas, they must prepare an exploration plan containing detailed information and analysis to the appropriate regional BOEM director.[128] This exploration plan is subject to review under both NEPA and the Coastal Zone Management Act.[129] Similarly, operators must undergo additional regulatory review and environmental analysis before commencing development and production.[130]

Under OCSLA, a lease may be suspended, thus pausing operations at the lease site:

1. When it is in the national interest;
2. To facilitate proper development of a lease;
3. To allow for the construction or negotiation for use of transportation facilities;
4. When there is a threat of serious, irreparable, or immediate harm or damage to life (including fish and other aquatic life), to property, to any mineral deposits (in areas leased or not leased), or to the marine, coastal, or human environment.[131]

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[123] 30 C.F.R. § 556.302.
[124] *Id.* at § 556.304.
[125] *Id.*
[126] 43 U.S.C. § 1337(d).
[127] *Id.* at § 1337(a)(7); 30 C.F.R. §§ 556.900-556.907.
[128] 43 U.S.C. § 1340(b)-(c); 30 C.F.R. §§ 550.226, 550.227, 550.232, 550.235.
[129] 30 C.F.R. §§ 550.232(c), 550.235.
[130] 43 U.S.C. § 1351; 30 C.F.R. § 550.201.
[131] 43 U.S.C. § 1334(a)(1).

5. When necessary to comply with judicial decrees;
6. To allow for installation of safety or environmental protection equipment;
7. To carry out NEPA or other environmental review requirements, or
8. To allow for inordinate delays encountered in obtaining required permits or consents.[132]

When a lease is suspended, OCSLA generally requires the term of the lease and affected permits to be extended by a length of time equal to the period of suspension.[133] If a suspension reaches five years, the Secretary may cancel a lease after holding a hearing and finding that:

1. Continued activity pursuant to a lease or permit would "probably" cause serious harm or damage to life (including fish and other aquatic life), to property, to any mineral (in areas leased or not leased), to the national security or defense, or to the marine, coastal, or human environment;
2. The threat of harm or damage will not disappear or decrease to an acceptable extent within a reasonable period of time; or
3. The advantages of cancellation outweigh the advantages of continuing the lease and attached permits.[134]

OCSLA provides for certain damages to lessees in the event of cancellation, specifically the lesser of: (1) the fair value of the canceled rights on the date of cancellations, or (2) the excess of the consideration paid for the lease, plus all of the lessee's exploration- or development-related expenditures, plus interest, over the lessee's revenues from the lease.[135]

OCSLA allows leases to be transferred or assigned, with some restrictions.[136] Additionally, most OCSLA leases obligate the lessee to pay

[132] 30 C.F.R. §§ 250.173-250.175.
[133] This does not apply when the suspension results from a lessee's gross negligence or willful violation of their lease/permit or of related regulations. 43 U.S.C. § 1334(a)(1).
[134] 43 U.S.C. §§ 1334(a)(2)(A)(i)-(iii); *see* 30 C.F.R. §§ 550.180-550.185.
[135] 43 U.S.C. § 1334(a)(2)(C); *see* 30 C.F.R. §§ 550.184-550.185.
[136] The statute requires transferees or assignees to continue compliance with OCSLA, related regulations, and all lease terms, and BOEM's approval prior to transfer. 43 U.S.C. §§ 1334(b), 1337(e). The general lease terms further require a lessee to file an instrument of assignment or transfer of rights with the appropriate regional BOEM OCS. Form BOEM-2005 (February 2017).

royalties based on the "amount or value of the production saved, removed or sold" by the lessee.[137] Generally, the royalty rate is at least 12.5%,[138] but some leases are exempt from payment pursuant to a statutory or administratively determined decision.[139] These royalties represent a type of rent that lessees pay in exchange for physical control of and stronger property rights to the leased areas, specifically to fulfill the statutory requirement that the federal government receives "fair market value for the lands leased and the rights conveyed […]."[140] BOEM sets royalty rates, rentals rates, and even minimum bid levels based on its assessment of market and resource conditions.[141]

B. Offshore Wind and Wave Energy[142]

Cape Wind Associates, LLC proposed the first offshore wind project in U.S. waters in 2001. At the time, the Corps claimed jurisdiction over offshore renewable energy projects under a combination of the RHA and Section 4 of OCSLA.[143]

In 2001, Cape Wind applied for a RHA Section 10 permit from the Corps to authorize the construction of a data-collection tower on the OCS that could inform Cape Wind's assessment of an offshore wind facility's feasibility in the area.[144] The Corps eventually issued the permit to Cape Wind after a lengthy

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[137] 43 U.S.C. § 1337(a)(1).
[138] *See id.*
[139] The Deepwater Royalty Relief Act of 1995 provides for an exemption for certain deepwater leases issued during a specific time frame. *See* P.L. No. 104-58, 109 Stat. 563 (1995). In addition, Section 8 of OCLSA (43 U.S.C. §1337) authorizes certain administrative exemptions to be issued at the discretion of BOEM. *See* 43 U.S.C. § 1337. For further information on the various exemptions to royalty payment obligations, see http://www.boem.gov/Royalty-Relief- Information/.
[140] 43 U.S.C. § 1344(a)(4).
[141] *Lease Sales and Fair Market Value*, BUREAU OF OCEAN ENERGY MGMT., https://www.boem.gov/oil-gas-energy/energy-economics/fair-market-value (last visited Aug. 12, 2021).
[142] This section is adapted from Section III of Catherine Janasie, *The Development of Wind Energy in the Mid-Atlantic Region: The Legal Process and Lessons from the Cape Wind Project*, 6:1 SEA GRANT L. & POLICY J. 116, 122-29 (2013).
[143] *Id*.; *see* 33 U.S.C. §§ 407-687. In limited circumstances, the Corps' jurisdiction under the RHA extends to artificial islands, installations, and devices on the OCS. *See* 43 U.S.C. § 1333(a)(1). "Devices" includes those built "for the purpose of exploring for, developing, or producing resources therefrom, or any such installation or other device (other than a ship or vessel) for the purpose of transporting such resources." *Id.*
[144] Janasie, *supra* note 142, at 123.

NEPA review and, following a legal challenge by the Alliance to Protect Nantucket Sound, the Corps' authority to issue the permit was confirmed by the U.S. District Court for the District of Massachusetts.[145]

Authority for the Cape Wind project changed in 2005 with the passage of the Energy Policy Act (EPAct), which Congress enacted to clarify the permitting process for renewable energy projects on the OCS.[146] This statute authorizes the Secretary of the Interior to grant leases, easements, and rights-of-way on the OCS for activities that produce or support the production, transportation, or transmission of energy from sources besides oil and gas.[147] The EPAct also amended OCSLA to allow the DOI to authorize alternate marine-related uses of existing facilities on the OCS.[148] The EPAct specifically does not alter the authority of federal agencies under other federal laws, meaning the Corps' authority under Section 10 of the RHA remains the same under the post-EPAct legal framework.[149]

Regulations promulgated under the OCSLA detail the process for applicants to obtain leases, easements, and rights-of-way on the OCS,[150] as well as for alternate uses of existing OCS facilities.[151] There are two types of leases that may be used to authorize renewable energy activities on the OCS: commercial leases and limited leases. Commercial leases are for the commercial operations generating energy on the OCS, and these leases give the lessee the right to produce, sell, and deliver power derived from a renewable energy project on a commercial scale.[152] Limited leases, meanwhile, are for operations that support energy production "but do not produce energy to be sold, distributed, or

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[145] *See id*; Alliance to Protect Nantucket Sound, Inc. v. Dep't of Army, 288 F. Supp. 2d 64, 75 (D. Mass. 2003).
[146] *Id.*
[147] Energy Policy Act, P.L. 109-58, 119 Stat. 594 (2005), 43 U.S.C. § 1337(p)(1)(C).
[148] *Id.* at § 1337(p)(1)(D).
[149] Janasie, *supra* note 142, at 123.
[150] Rights-of-way are for activities not covered by leases or permits, such as pipeline authorizations.
[151] Renewable Energy and Alternate Uses of Existing Facilities on the Outer Continental Shelf, 30 C.F.R. pt. 585 subpt. J (2021); *see also* Stephanie Showalter Otts and Terra Bowling, *Offshore Renewable Energy Regulatory Primer*, NAT'L SEA GRANT L. CTR. (2011), http://nsglc.olemiss.edu/offshore.pdf.
[152] Janasie, *supra* note 142, at 125; *see* 30 C.F.R. § 585.112. The regulations define renewable energy as "energy resources other than oil and gas and minerals as defined in 30 C.F.R. part 580. Such resources include, but are not limited to, wind, solar, and ocean waves, tides, and current." *Id.*

used in another way."[153] These leases have a duration of five years and also confer the lessee an easement over OCS lands to install substations, lines, and pipelines.[154]

Much like the oil and gas leasing under the OCSLA, obtaining a lease is merely the beginning of a multi-step leasing process that an applicant must successfully navigate before their offshore wind farm can commence operations. BOEM's wind energy program ushers applicants through four separate stages: (1) Planning, which is aimed at locating suitable areas for offshore wind projects; (2) Lease Issuance, which can be obtained through a competitive or a noncompetitive process; [155] (3) Approval of a Site Assessment Plan (SAP); and (4) Approval of a Construction and Operations Plan (COP).[156]

The commercial lease process continues through a phased-in process similar to that required under the OCSLA. Applicants must submit plans and obtain approval through later stages of this process in order to continue moving towards development. Once the COP is approved, commercial leases then provide a twenty-five year term for the developer to operate the facility.[157]

Limited leaseholders follow a different process under the regulations. These lessees are required to submit a General Activities Plan (GAP) for the developer's resource assessment activities and technology testing.[158] Activities on a lease cannot begin until BOEM approves the project's GAP. Once the GAP is approved, the developer has five years to conduct the approved activities unless BOEM renews the lease at the end of that five-year period.[159]

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[153] Janasie, *supra* note 142, at 125; *see* 30 C.F.R. § 585.112.
[154] 30 C.F.R. § 585.236.
[155] 30 C.F.R. § 201. Competitive leases must meet the requirements of 30 C.F.R. §§ 585.210-225. Noncompetitive leases must meet the requirements of 30 C.F.R. §§ 585.230-232, as amended by 76 Fed. Reg. 28,178. BOEM will issue leases on a competitive basis, unless it determines that no competitive interest exists for a lease after public notice. If it makes this determination, BOEM will issue a noncompetitive lease. 30 C.F.R. § 585.201.
[156] OFFICE OF RENEWABLE ENERGY PROGRAMS, BUREAU OF OCEAN ENERGY MGMT., COMMERCIAL WIND LEASE ISSUANCE AND SITE ASSESSMENT ACTIVITIES ON THE ATLANTIC OUTER CONTINENTAL SHELF OFFSHORE NEW JERSEY, DELAWARE, MARYLAND, AND VIRGINIA, FINAL ENVIRONMENTAL ASSESSMENT (2012).
[157] 30 C.F.R. § 585.235.
[158] *Id.* § 585.640.
[159] *Id.* § 585.652.

In order to be approved, all SAPs, COPs, and GAPs must demonstrate that the proposed activities will:

- Conform to the lease provisions and applicable laws and regulations;
- Be safe;
- Have no unreasonable interference with other OCS uses;
- Will not unduly harm or damage natural resources; property; human life; wildlife; property; the human, coastal, or marine environment; or structures, objects, or sites with archaeological or historical significance; and
- Use the safest, best available technology, best management practices, and trained personnel.[160]

DOI attempted to streamline the approval process for offshore wind projects on the OCS by launching its Smart from the Start Initiative in November 2010.[161] As part of the Smart from the Start process, BOEM designated Wind Energy Areas (WEAs) with the high potential for commercial renewable energy activities and the fewest number of conflicts with other uses (e.g., shipping routes and wildlife habitats).[162] In addition to requiring BOEM-led regional environmental assessments, the WEA process allows for the participation of other federal agencies, and their input is used to either encourage or avoid renewable energy projects in identified areas.[163]

C. Leasing of Grazing Rights

Livestock grazing on public lands is jointly administered by the Bureau of Land Management (BLM), which is within the Department of the Interior, and the Department of Agriculture's U.S. Forest Service (USFS). Under the current statutory framework, the USFS is responsible for managing the 193 million acres of land within the federal National Forest System, which includes 154 national

[160] *Id.* §§ 585.606, 585.621, 585.641.
[161] Press Release, Dep't of the Interior, Salazar Launches 'Smart from the Start' Initiative to Speed Offshore Wind Energy Development off the Atlantic Coast (Nov. 23, 2010), http://www.doi.gov/news/pressreleases/Salazar-Launches-Smart-from-the-Start-Initiative-to-Speed-Offshore-Wind-Energy-Development-off-the-Atlantic-Coast.cfm.
[162] Janasie, *supra* note 142, at 126-27.
[163] *Id.* at 127; Nuclear Reg. Comm'n, *Frequently Asked Questions: "Smart from the Start" Atlantic OCS Offshore Wind Initiative* (Oct. 21, 2011), https://www.nrc.gov/docs/ML1202/ML12026A738.pdf.

forests, twenty national grasslands, and various other federal land designations in forty-three states, Puerto Rico, and the U.S. Virgin Islands.[164] BLM, on the other hand, administers more than 244 million acres of public lands that are overwhelmingly located in the twelve western states.[165]

Notably, the BLM's grazing system allows for both permits and leases. Despite BLM distinguishing between permits and leases, these instruments are nearly identical in practice. The only difference is that leases are for grazing lands that are sufficiently isolated or otherwise uniquely situated so as to justify their exclusion from an established grazing district.[166] Data could not be located for the USFS, but BLM alone administers nearly 18,000 permits and leases held by ranchers who graze their livestock—mostly cattle and sheep—for at least part of the year on one of more than 21,000 allotments.[167] An allotment is a geographical area of land that is generally contiguous and can be divided into smaller units, called pastures. Pastures can be made up of thousands of acres. The pastures are divided from each other by fences or physical land formations such as canyons or cliffs that are impassable for livestock. Each grazing permit or lease can have one or more allotments.

Permits and leases generally cover a ten-year period and are renewable if BLM or USFS determines that the terms and conditions of the expiring permit or lease are being met.[168] An applicant must own base property and livestock to be eligible for a grazing permit. Base property is private land owned or controlled by the permittee that serves as a location where livestock can be moved if they need to vacate the grazing permit for some reason. Today, acquiring a permit to graze livestock on federal lands is not a simple process, as all public lands eligible to be grazed by livestock are already obligated under existing permits.[169]

The pastures are the key components of the grazing system for each allotment. The key to successful grazing is season, timing, and numbers. A simple

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[164] KATIE HOOVER ET AL., CONG. RSCH. SERV., THE FEDERAL LAND MANAGEMENT AGENCIES 8 (2021), https://fas.org/sgp/crs/misc/IF10585.pdf.
[165] *Id*.
[166] *See* 43 U.S.C. §§ 315, 315b, 315m.
[167] *Livestock Grazing on Public Lands*, BUREAU OF LAND MGMT., https://www.blm.gov/programs/natural-resources/rangelands-and-grazing/livestock-grazing (last visited Aug. 23, 2021).
[168] *Id.*
[169] JAMES D. KEYES & JAMIE J. KEYES, UTAH STATE UNIV. EXTENSION PROGRAM, FEDERAL LANDS GRAZING PERMITS: MANAGING RANGELAND RESOURCES (2015).

type of grazing procedure is the Rest-Rotation system. If the allotment consisted of three pastures, one of them would receive twelve months of rest each season. The other two pastures would carry the grazing load under a schedule of rotation. For example, livestock would be in Pasture A for the first part of the grazing season, and moved into Pasture B to finish the period of use. Pasture C would be rested. The next year livestock might begin the season in Pasture C and move into A at a later time, with Pasture B receiving rest.[170]

At the beginning of each grazing season the permittee will receive a document that states the name of the allotment, the time period of the grazing season, the system for use of the different pastures, and the number of animal unit months (AUMs) available.[171] One AUM is defined as the amount of forage required to support a cow and her calf for one month.[172] A grazing permit will have a preferred number of AUMs. Due to drought conditions or other situations, the available forage may not be enough for the preferred number. In this case, a number is calculated by using data from the allotment that is collected by a BLM or USFS range conservationist. In the event of a drought, a lower number of AUMs is assigned, the season of use may be changed, or both. In addition to the permittee's preferred number of AUMs, the permit documentation includes the basic information of the permittee's livestock operation, including the kind and number of livestock.[173]

The cost of the grazing fee is computed annually by using a 1966 base value of $1.23 per AUM. The figure is then calculated according to three factors– current private grazing land lease rates, beef cattle prices, and the cost of livestock production.[174] In effect, the fee rises, falls, or stays the same based on market conditions, with livestock operators paying more when conditions are better and less when conditions have declined. Under a 1986 Presidential Executive Order, the grazing fee cannot fall below $1.35 per AUM, and any increase or decrease cannot exceed 25% of the previous year's level.[175]

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[170] *Id*.
[171] *Id*.
[172] *Id*.
[173] *Id*.
[174] *Id*.
[175] Exec. Order No. 12,548, 51 Fed. Reg. 5,985 (Feb.19, 1986).

D. National Forest Timber Sales

In addition to its responsibilities related to grazing, the USFS administers about 114.9 million acres of federally owned forests, 96.1 million acres of which is timberlands. The USFS manages its timber lands under the Multiple Use-Sustained Yield Act of 1960, which directs the agency to balance multiple uses while ensuring there is a sustained yield from the forests in the future. The National Forest Management Act requires the USFS to engage in long-term planning for the use and management of the National Forests, and planning for timber harvesting is included in this process. USFS mostly authorizes private parties coming on federal land to harvest timber through contracts, though permits are used in certain situations.

Unlike the offshore oil and gas leasing process, which is predominantly directed through agency headquarters, USFS planning for timber sales is done by the regional office responsible for each National Forest.[176] Plans for each National Forest will consider harvesting timber for multiple purposes, including timber production, fire risk, and habitat protection. If an area is designated in a plan for timber production, the USFS will conduct a timber sale, which is done through a contract with a private party.[177]

The timber sale process involves developing a sale schedule and project plan, which can cover multiple sales. The USFS will then appraise the timber to be offered and create a sale package, including a sample contract. The USFS then advertises the sale with an appraised starting bid price and awards the contract to the highest bidder, as long as the bidder meets all other legal requirements. The awarded contract will contain details such as a harvest schedule, approved harvest methods, and conditions for building roads in the forest. The contracted timber harvest generally has to be completed in ten years.[178]

In addition to timber sale contracts, the USFS issues permits in two situations. The first is a Forest Product Removal Permit, which authorizes either the personal or commercial use of forest products. This permit allows the permittee to remove timber and other "special forest products," like mushrooms.

[176] *See* U.S. FOREST SERV., FOREST SERVICE MANUAL 2410 (2003).
[177] U.S. FOREST SERV., FOREST SERVICE HANDBOOK 2409.13.40 (1996).
[178] 16 U.S.C. § 472a.

The permit is meant for harvesting that will only have a limited resource impact and comes with a minimum charge of $20.[179]

The second type of USFS permit for timber harvesting is a Forest Products Free Use Permit. This permit allows someone to come onto federal lands to harvest firewood or other forest products for free if the removal is only for personal use. In addition, the removal must help protect and improve the relevant National Forest.[180]

VI. EXISTING MODELS - STATES

In addition to the frameworks in place for other commercial uses of federally owned lands, another way to gauge the relative strength, and potentially find inspiration for the reform, of property rights currently conveyed to aquaculture operations in the EEZ are authorization schemes for aquaculture that are already in place in coastal U.S. states. Although state governments have similar constraints on their management of public lands in their possession as the federal government, there are some notable differences that must be kept in mind when considering the potential application of these models to aquaculture operations in the EEZ (see Sections II(B)-II(D) above).

A. Maine

Maine law provides the leasing and regulatory framework for shellfish, finfish, and seaweed aquaculture within the state's waters. The Maine Department of Marine Resources ("DMR") is authorized to lease publicly owned submerged lands for finfish aquaculture and the suspended culture of other marine organisms.[181] Aquaculture leases are granted for the state's coastal waters, including the public lands beneath those waters and portions of the intertidal zone.[182] The leases last for a period of up to ten years, with a possible renewal for another ten years, and may encompass up to 100 acres.[183] However, the DMR may also issue an experimental lease or a limited-purpose aquaculture license

[179] *Timber Sale, Stewardship, and Forest Products Contracts and Permits*, U.S. FOREST SERV., https://www.fs.fed.us/forestmanagement/products/contracts.shtml (last visited Aug. 13, 2021).
[180] *Id.*; *see also* U.S. FOREST SERV., FOREST SERVICE MANUAL 2462 (2002).
[181] ME. REV. STAT. ANN. tit. 12, § 6072.
[182] *Id.* at § 6072(1).
[183] *Leasing Options,* ME. AQUACULTURE INNOVATION CTR., https://www.maineaquaculture.org/leasing-options/ (last visited Aug. 13, 2021).

(LPA) for commercial aquaculture research and development or for scientific research.[184] Experimental leases are issued for projects up to 4 acres in size for three-year terms, while the DMR uses LPAs to authorize small projects (up to 400 square feet surface area of certain types of gear) to culture certain types of oysters and clams.[185] In Maine, a standard aquaculture lease costs $1,500 for shellfish and $2,000 for finfish plus $100 an acre annual rent, with renewals of $1,000 for shellfish and $1,500 for finfish.[186]

B. Florida

Marine aquaculture in Florida coastal waters is currently dominated by shellfish operations.[187] The leasing of publicly owned submerged lands and the water column above them for shellfish aquaculture is handled by the Florida Department of Agriculture and Consumer Services – Division of Aquaculture (FDACS).[188] Florida Statute 597.003 directs FDACS to work with state and local agencies to identify and designate sovereign lands and waters that are suitable for aquaculture development. The leased area must be setback from other activities, channels, or structures to ensure safety and resource management and facilitate enforcement. Additionally, if the leased area is in an aquatic preserve, research reserve, marine sanctuary, or state park, the lessee's aquaculture activities need to be compatible with the area's management plan and other statutory requirements. To this end, FDACS has identified twenty-six aquaculture use zones, or AUZs, in state waters with pre-sited blocks of leases to reduce survey costs, potential user conflicts, and potential environmental impacts.[189]

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[184] ME. REV. STAT. ANN. tit. 12, § 6072-A.

[185] *Aquaculture Lease Applications and Forms*, ME. DEP'T OF MARINE RES., https://www.maine.gov/dmr/aquaculture/forms/index.html (last visited Aug. 13, 2021).

[186] AQUACULTURE PERSPECTIVE OF MULTI-USE SITES IN THE OPEN OCEAN 211 (Bela H. Buck & Richard Langan, eds., 2017), https://link.springer.com/book/10.1007/978-3-319-51159-7.

[187] While leasing provisions exist for finfish and seaweed operations in Florida, there are no current finfish or seaweed operations in the state.

[188] FLA. STAT. § 597.003.

[189] DIV. OF AQUACULTURE, FLA. DEP'T OF AGRIC. AND CONSUMER SERVICES, SHELLFISH AQUACULTURE LEASING PROCESS (2020), https://www.fdacs.gov/content/download/76600/file/FDACS-P-01758-Shellfish-Aquaculture-Leasing-Process-TB06.pdf; *see Aquaculture Submerged Land Leasing*, FLA. DEP'T OF AGRIC. AND CONSUMER SERVICES, https://www.fdacs.gov/Agriculture-Industry/Aquaculture/Aquaculture-Submerged-Land-Leasing (last visited Aug. 23, 2021).

A lease of submerged lands includes exclusive use of the water column above the leased area to the extent required by the aquaculture activity.[190] Areas leased for oyster aquaculture must be ten acres or less; while the governing statute does not provide for a limit on the size of a lease for non-oyster shellfish aquaculture, the leased area is only supposed to be large enough to be efficiently used by the lessee.[191] Meanwhile, the lease lasts ten years with the possibility of renewal for another ten.[192] In exchange for the lease, all lessees must pay a $200 application fee.[193] Additionally, current bottom lease fees are $16.73 per acre and fraction thereof, plus a $10.00 surcharge per acre and fraction thereof.[194] Fees for water column leases, on the other hand, are $33.46 per acre and fraction thereof, plus a $10.00 surcharge per acre and fraction thereof.[195]

C. Washington

At statehood in 1889, Washington's Constitution established state ownership to the "beds and shores of all navigable waters in the state […]."[196] These lands are called aquatic lands and are further subdivided into bedlands, which are below the extreme low tide line; tidelands, which are between the ordinary high tide line and the extreme low tide line; and shorelands, which are along the edge of rivers and lakes. Generally, the state owns the bedlands, and either the state or private parties may own the tidelands.[197] In Washington, owners of land abutting state-owned aquatic lands could purchase tidelands or shorelands from the state for more than 80 years until the practice was stopped by the state Legislature in 1971.[198]

On the aquatic land that remains state-owned, Washington's Department of Natural Resources (DNR) is authorized to lease the lands for the cultivation of oysters, clams, and other shellfish. When a shellfish culture project requires the

[190] FLA. STAT. § 253.68.
[191] *Id.* § 253.71(3).
[192] *Id.* § 253.71(1).
[193] DIV. OF AQUACULTURE, *supra* note 189.
[194] *Id.*
[195] *Id.*
[196] WASH. CONST. art. XVII.
[197] *See* PETER GOLDMARK, COMM'R PUB. LANDS, WASH. DEP'T NAT. RES., BOUNDARIES OF STATE-OWNED AQUATIC LANDS, http://www.dnr.wa.gov/Publications/aqr_aquatic_land_boundaries.pdf (last visited Aug. 23, 2021).
[198] NIKI PACE, ET AL., INVENTORY OF SHELLFISH RESTORATION PERMITTING & PROGRAMS IN THE COASTAL STATES 182 (2014), https://masglp.olemiss.edu/projects/files/tnc-report.pdf.

leasing of state-owned aquatic lands, the applicant must obtain authorization to use such lands from the DNR through an agreement, lease, permit, or other instrument.[199] Under this system, certain types of tidelands and shorelines may be leased for up to fifty-five years.[200] Abutting upland owners receive lease preferences for these tidelands and shorelands.[201] Regardless of whether the lessee is an abutting upland owner, the lessee must pay rent in exchange for the lease. Lease amounts are based on a percentage of production and fluctuate from year to year.[202] More recent data is not currently available, but leases in Pacific and Grays Harbor counties had an average rental fee of $93 per acre in 2015, while leases in the Puget Sound region averaged about $1,900 per acre at that time.[203]

The collapse of a net pen at an aquaculture farm off the coast of Washington State in 2017 caused more than 300,000 non-native Atlantic salmon to escape into the wild.[204] The state legislature consequently voted to phase out the net-pen farming of Atlantic salmon in Washington by 2025,[205] but aquaculture operations may continue to incorporate other species of finfish and methods of cultivating them.[206]

D. Hawaii

The Hawaii Legislature authorized the lease of state-owned submerged lands for commercial offshore aquaculture in the Ocean Leasing Law of 1999

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[199] WASH. ADMIN. CODE § 332-30-122.
[200] WASH. REV. CODE § 79.125.200.
[201] *Id.* at § 79.125.400.
[202] WASH. SEA GRANT, SHELLFISH AQUACULTURE IN WASHINGTON STATE: FINAL REPORT TO THE WASHINGTON STATE LEGISLATURE 12 (2015), https://wsg.washington.edu/shellfish-aquaculture.
[203] *Id.*
[204] *See* Lynda V. Mapes and Hal Bernton, *Please go fishing, Washington state says after farmed Atlantic salmon escape broken net*, SEATTLE TIMES (Aug. 24, 2017), https://www.seattletimes.com/seattle-news/environment/oops-after-accidental-release-of-atlantic-salmon-fisherman-being-told-catch-as-many-as-you-want/.
[205] *See* Lynda V. Maps, *State kills Atlantic salmon farming in Washington*, SEATTLE TIMES (Mar. 23, 2018), https://www.seattletimes.com/seattle-news/politics/bill-to-phase-out-atlantic-salmon-farming-in-washington-state-nears-deadline/.
[206] *See* Cliff White, *Cooke Aquaculture gets key permits for steelhead transition in Washington*, SEAFOOD SOURCE (Jan. 7, 2021), https://www.seafoodsource.com/news/aquaculture/cooke-aquaculture-gets-key-permits-for-steelhead-transition-in-washington.

(OLL).[207] Leases are administered by the state's Department of Land and Natural Resources (DLNR).[208] The OLL allows for the leasing of state marine waters, which it defines as "all waters of the State, including the water column, water surface, and submerged lands, extending from the upper reaches of the wash of the waves on shore seaward to the limit of the State's police power and management authority […]."[209] The OLL contains provisions for both direct leasing and public auction of eligible waters and, in addition to requiring lessees to post a performance bond, also requires annual payment of rent that comprises both a fixed cost and a percentage of gross revenues. Notably, all leases contain a provision that indicates lessees forfeit their claim to any escaped fish, which become common property of the state.[210]

There are very few limitations pertaining to the duration of an aquaculture lease in Hawaii. Although it is theoretically possible for a lease to last up to sixty-five years, the recent trend has been a duration of fifteen years with the possibility of renewal for another fifteen years.[211] Of the two existing open ocean aquaculture leases for which this information is available, one has a duration of twenty years and the other has a term of fifteen years with possible renewal for another ten years.[212] Rent is calculated as $100 per acre per year or 1.25% of gross sales, whichever is greater, plus a permit processing fee of 2.5% of the project cost (with a limit of $2,500).[213]

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[207] H.R. 984, 20th Leg. (Haw. 1999), https://www.capitol.hawaii.gov/session1999/bills/HB984_.htm. Note that the law actually authorizes the leasing of state marine waters for, among other activities, "mariculture," which it defines as "the aquaculture, cultivation and production for research, development, demonstration, and commercial purposes of aquatic plants and animals within state waters but excludes floating structures that are not anchored." *Id.* at § 4. For purposes of ease and convenience, however, these activities will be referred to as aquaculture in the remaining analysis. *Id.*

[208] Haw. Rev. Stat. §§ 190D-3, 190D-2, https://dlnr.hawaii.gov/occl/files/2013/08/CHAPTER-190D.pdf.

[209] *Id.* § 190D-3.

[210] *Id.* § 190D-23(a)(7).

[211] AQUACULTURE PERSPECTIVE OF MULTI-USE SITES IN THE OPEN OCEAN, *supra* note 186, at 211.

[212] John Corbin, *Offshore Aquaculture Development in Hawaii*, HAW. DEP'T AGRIC. https://www.whoi.edu/cms/files/jmcdowell/2006/7/Corbin_Offshore_Aquaculture_Development_in_Hawaii_12248.pdf (last visited Aug. 13, 2021).

[213] AQUACULTURE PERSPECTIVE OF MULTI-USE SITES IN THE OPEN OCEAN, *supra* note 186, at 211.

E. New Jersey[214]

New Jersey allows for state water bottoms to be leased for shellfish aquaculture on both its Atlantic and Delaware Bay coasts.[215] Leases are obtained from the Bureau of Shellfisheries (located in the Division of Fish and Wildlife in the New Jersey Department of Environmental Protection) in coordination with the Shellfish Council.[216]

New Jersey developed an Aquaculture Development Zone (ADZ) in the mid-2000s to promote the development of oyster aquaculture in the Garden State. Only structural aquaculture is allowed in the ADZ.[217] Structural aquaculture refers to operations that use gear to contain seed oysters while they are raised for cultivation purposes.[218] This gear might take the form of rebar racks, mesh bags, cages, or floats, all of which need permits from the Corps and the State of New Jersey even within the ADZ.[219] The ADZ has several purposes. First, it streamlines the permitting process for potential oyster farms because the New Jersey Bureau of Shellfisheries obtains all necessary permits from the Corps and relevant state agencies on behalf of individual growers within the ADZ.[220] Additionally, the ADZ allows for shellfish farms to be located in areas with the fewest use conflicts.[221] And by grouping multiple aquaculture farms in one area, the state is able to more effectively manage aquaculture operations, help harvesters share upland access to farms, and facilitate farms' access to seed, equipment, and technical support.[222]

ADZ leases are non-transferable and have an initial term of five years.[223] The state will terminate the lease if it determines "that the ecological impacts of

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[214] This section was adapted from Catherine Janasie, *The Effects of the Endangered Species Act on Shellfish Aquaculture in New Jersey*, *in* OVERCOMING IMPEDIMENTS TO SHELLFISH AQUACULTURE THROUGH LEGAL RESEARCH AND OUTREACH: CASE STUDIES 6, 7 (2019), http://nsglc.olemiss.edu/projects/shellfish-aquaculture/files/casestudies.pdf.
[215] *See* N.J. ADMIN CODE §§ 7:25-24.1 – 7:25-24.17.
[216] N.J. STAT. ANN. § 50:1-23.
[217] *Id.*
[218] *Id.*
[219] *Id.*
[220] *Id.*
[221] *Id.*
[222] *Id.*
[223] BUREAU OF SHELLFISHERIES, N.J. DEP'T ENVTL. PROT., AQUACULTURE DEVELOPMENT ZONE LEASE APPLICATION,

the aquaculture activities are so great that they compromise the integrity and protection of any endangered or non-game species."[224] In order to receive a lease, the lessee must: first, be eighteen years or older; second, be a resident of New Jersey; and third, possess a Commercial Shellfish License from the New Jersey Division of Fish and Wildlife or shellfish certificate from the New Jersey Department of Health and Senior Services. There is a $1,000 fee for the ADZ lease application, and annual rental fees range from $25-$100 per acre.[225]

F. Oregon

Oregon uses a lease to authorize aquaculture operations.[226] The Oregon Department of State Lands (ODSL) issues leases for submerged lands in the state. Submersible lands owned by Oregon may be leased only to the higher bidder, bidding at least the minimum amount designated by the ODSL after being advertised not less than once each week for two successive weeks. Any owner of lands abutting or fronting on such submersible lands shall have the preference right to lease unless the lands are occupied by a person claiming the right of occupancy under a conveyance. If so, the occupant shall have the preference right to lease.[227]

One type of aquaculture, however, is expressly excluded from these provisions: kelp aquaculture.[228] Thus, in the state, kelp aquaculture is authorized with either a special use lease or license. While Oregon has not yet established an appreciable commercial kelp aquaculture industry, the state provides an informative example of a regulatory system that uses both leases and licenses.

Application requirements for a special use lease or license include applying in writing using a form provided by the ODSL and a non-refundable

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https://www.njfishandwildlife.com/pdf/2011/adz_application_packet.pdf (last visited Aug. 13, 2021).

[224] *Id.*

[225] *Shellfish Leases Available in Delaware Bay*, N.J. DIV. OF FISH & WILDLIFE (Nov. 14, 2011), https://www.njfishandwildlife.com/news/2011/shellfish_leases.htm.

[226] OR. ADMIN. R. 141-082.0265.

[227] OR. REV. STAT. § 274.040.

[228] OR. ADMIN. R. 141-082.0255. The definition of aquaculture is: "the culture, farming, or harvesting of food fish, shellfish, and other plants (*exclusive of kelp which is governed by Division 125 of the Department's administrative rules*) and animals in fresh or salt-water areas. Aquaculture practices include, but are not limited to, the hatching, seeding or planting, cultivating, feeding, raising, and harvesting of planted or natural species so as to maintain an optimum yield, and the processing of plants or animals." *Id.* (emphasis added).

application fee of $750. A fully completed application must be submitted at least 180 days before the proposed use or placement.[229] The ODSL can implement a competitive bidding process if it believes it would best serve the public interest to have the parcel in question go through a public bidding process.[230] In addition, the leased or licensed area will be the minimum area required for the requested use.[231] Lessees must pay rent to the ODSL in exchange for leasing state lands.[232] Rent for shellfish plat leases in Oregon consists of: $14 for each approved acre leased and $5 for each prohibited acre leased; 10¢ per gallon, if the operator sells the cultured species by the gallon; 10¢ per bushel, if sold in the shell by the bushel; and 1¢ per dozen, ifsold by the dozen.[233] Details about how rent is formulated for non-shellfish aquaculture on state lands are not available at present.

In Oregon, a special use lease will not exceed thirty years unless otherwise approved by the ODSL. The term of a license will be less than three years and only offers the holder a "non-exclusive, short-term use of a specific area of state-owned land."[234] In the state, a special use lease is assignable, while a special use license is not. However, the state allows subleases and sublicenses.[235] If the special use lease or license holder does not comply with the ODSL's rules, the lease or license holder will be considered in default. The ODSL will notify the holder of the default and demand correction within a specified time frame. Failure to do so may result in the ODSL modifying or terminating the authorization and requesting that the state Attorney General take appropriate legal action against the holder.[236]

VII. INTERNATIONAL MODELS

In addition to the property rights regimes that U.S. coastal states have developed for offshore aquaculture and frameworks that apply to other commercial activities on federal lands, consideration of the property rights aspects of foreign offshore aquaculture regimes may also be informative. First, this

[229] OR. ADMIN. R. 141-125-0130.
[230] *Id.* at 141-125-0150.
[231] *Id.* at 141-125-0170.
[232] *Id.* at 141-125-0160.
[233] *Shellfish Plat Leasing*, OR. DEP'T OF AGRIC., https://www.oregon.gov/oda/programs/FoodSafety/Shellfish/Pages/ShellfishPlat.aspx (last visited Aug. 23, 2021).
[234] OR. ADMIN. R. 141-125-0120.
[235] *Id.* at 141-125-0200.
[236] *Id.* at 141-125-0190.

information provides additional perspective on how governments have balanced the property rights needs of offshore aquaculture operations with other marine activities and obligations to the public. Additionally, in light of the global interest in offshore aquaculture operations, future efforts to clarify or reform the U.S. regime are likely to have significant implications on the U.S.'s attractiveness to operators and investors. As a result, surveying foreign property rights regimes for offshore aquaculture operations is also important for gauging how competitive the current and future federal authorizations frameworks are as compared to their counterparts abroad.

A. Norway

The Norwegian Aquaculture Act of 2005 (Norwegian Act) regulates the management, control, and development of aquaculture in both inland waters and marine waters, which includes internal waters, territorial waters, the EEZ, and the OCS, as well as land-based aquaculture.[237] The purpose of the Norwegian Act is "to promote the profitability and competitiveness of the aquaculture industry within the framework of sustainable development and contribute to the creation of value on the coast."[238]

The Norwegian Act establishes a licensing system, and broadly applies to issues like environmental standards, land use, registration, and transfer and mortgaging of licenses, as well as control and enforcement.[239] Aquaculture cannot be carried out without a license.[240] In addition, offshore aquaculture operations in Norway need site-specific planning permission from local authorities.[241] Local authorities manage the overall process for each application.

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[237] *See* Act No. 79 relating to Aquaculture (the Aquaculture Act) (2005), available in English at https://www.fiskeridir.no/English/Aquaculture/Aquaculture-Act.
[238] *Id.* at § 1.
[239] *See id.* at §§ 4-7, 10-18.
[240] *Id*. § 4.
[241] MARY MOYLAN ET AL., INDEP. AQUACULTURE LICENSING REVIEW GRP., REVIEW OF THE AQUACULTURE LICENSING PROCESS 1, 33 (2017), http://www.fishingnet.ie/media/fishingnet/content/ReviewoftheAquacultureLicensingProcess310517.pdf.

The Ministry of Fisheries and Coastal Affairs (Ministry) is responsible for administering the Norwegian Act and may prescribe regulations thereunder.[242] Under the Norwegian Act, the Ministry can grant an aquaculture license if:

1. The project is environmentally responsible;
2. "The land use interests have been weighed";
3. "The requirements...concerning land use plans and conservation measures have been met"; and
4. The applicant has also secured the appropriate licenses relating to food safety, pollution and waste management, and harbors and fairways.[243]

The Norwegian Act vests the Ministry with additional authority over the culture of salmon and trout in particular, for which the Ministry may determine:

(a) the number of licenses to be allocated;
(b) geographic distribution of licenses;
(c) prioritization criteria;
(d) selection of qualified applications in accordance with the prioritization criteria ...; and
(e) payment for the allocation of licenses.[244]

The Ministry releases license tranches from time to time at its discretion, and the licenses are typically auctioned.[245] The licenses are issued in perpetuity to the highest bidder and become property assets; in the same vein, the Norwegian Act expressly declares that aquaculture licenses can be mortgaged, bought, or sold.[246] With respect to the space used for aquaculture operations, Norway's coastline is divided into different zones depending on the activities which are permitted in a particular region: traffic, fishing, aquaculture, nature, or recreation.[247] Aquaculture facilities may be established only in the aquaculture zone, and each

[242] NOR. MINISTRY OF FISHERIES & COASTAL AFFAIRS, THE AQUACULTURE ACT (2005), https://www.regjeringen.no/globalassets/upload/kilde/fkd/reg/2005/0001/ddd/pdfv/255327-l-0525_akvakulturloveneng.pdf.
[243] Aquaculture Act of 2005 § 6.
[244] *Id.* § 7.
[245] MOYLAN ET AL., *supra* note 241, at 33.
[246] *Id.*; Aquaculture Act of 2005 §§ 18-20.
[247] Anne-Katrine Lundebye, *Aquaculture Site Selection and Carrying Capacity for Inland and Coastal Aquaculture in Northern Europe*, FOOD & AGRIC. ORG. 171, 173 (2013), http://www.fao.org/tempref/FI/CDrom/P21/root/10.pdf.

individual operation's use of space is authorized and afforded legal protections by a license.[248]

B. Chile

Aquaculture in Chile is regulated by the Fisheries and Aquaculture Law of 1989 (Chilean Law) and its amendments. The Chilean Law establishes a system with three classes of concessions and authorizations to conduct aquaculture: (1) beaches; (2) coastal areas; and (3) water column and seabed lots. No distinction is made with regard to different aquaculture techniques or species. An authorization or concession is not required for aquaculture activities carried out entirely on private property, even when inland or marine waters are used, provided they are used in accordance with the respective regulations.[249]

The concession or authorization confers the right to conduct aquaculture activities in a specific area and may concern either a single species or a group of species. Only individuals of Chilean nationality or foreigners with permanent residence in the country, as well as Chilean legal entities, may apply for aquaculture concessions or authorizations. The Ministry of Defense grants aquaculture concessions, which confer the right to use and benefit from State property (marine beaches; public coastal areas; water column and seabed lots; navigable rivers and lakes for vessels over 100 gross tons) for an indefinite period of time by allowing the concessionaire to establish an aquaculture facility. The Sub-Secretariat for Fisheries grants aquaculture authorizations, which confer an indefinite right to use and benefit, for aquaculture purposes, from the streams and water bodies that are not under the authority of the Ministry of Defense and are classified as suitable for aquaculture development.[250]

As required by the Chilean Law, authorized areas for aquaculture activities are declared by Ministerial Decree. Twelve regions have been identified so far. The areas authorized for the establishment of an aquaculture facility area are "geographical areas which are classified as such by the Sub-Secretariat of Fisheries to be adequate for the establishment of an aquaculture facility."[251]

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[248] *Id.*
[249] *National Aquaculture Legislative Overview: Chile*, FOOD & AGRIC. ORG., http://www.fao.org/fishery/legalframework/nalo_chile/en (last visited Aug. 13, 2021).
[250] *Id*.
[251] *Id*.

C. Canada

In Canada, the aquaculture industry is overseen by a combination of federal, provincial, and local authorities.[252] Specific responsibilities for aquaculture have been delegated by the federal government to the provincial level through memoranda of understanding.[253] Under this framework, the federal Department of Fisheries and Oceans Canada (DFO) coordinates with the provincial ministries for the federal review of access to land and water for aquaculture applications.[254] The provinces are in turn responsible for aquaculture planning, site leasing, and license approvals for aquaculture sites.[255]

The provincial governments utilize a combination of leases and licenses or permits to authorize aquaculture operations on publicly owned lands, and these instruments generally last for a period of ten to twenty years with the possibility of renewal.[256] The best case study of provincial legal frameworks for aquaculture in Canada is British Columbia, which has developed a particularly robust framework for authorizing aquaculture operations. The province requires aquaculture operations on provincial land to have both an aquaculture license under the provincial Fisheries Act of 1996 and a crown land tenure—i.e., a lease—under the provincial Land Act of 1996.[257] Additionally, all finfish and shellfish aquaculture lease applications must include a management plan and, if the proposed facility requires access to surface water, a water license under the Water Act of 1996 may also be required.[258] Aquaculture operations on provincial lands must also not infringe on the riparian rights of an upland owner.[259]

All applications for aquaculture leases in British Columbia are subject to consideration of First Nations interests and rights, standard interagency consultation processes, and community input as part of the public participation

[252] *National Aquaculture Legislative Overview: Canada*, FOOD & AGRIC. ORG., http://www.fao.org/fishery/legalframework/nalo_canada/en (last visited June 29, 2021).
[253] *Id.*
[254] *Id.*
[255] *Id.*
[256] *See* Standing Senate Committee on Fisheries and Oceans, *Volume One – Aquaculture Industry and Governance in Canada*, SENATE OF CANADA 19-53 (June 2016), https://sencanada.ca/content/sen/committee/421/POFO/reports/2016-06-22_POFO_AquacultureVolume1_Final_E.pdf.
[257] *See National Aquaculture Legislative Overview: Canada*, *supra* note 251.
[258] *Id*.
[259] *Id*.

process.[260] Generally, new aquaculture sites are issued an initial five-year license of occupation to allow the operator to prove site viability.[261] A five-year license of occupation may also be used to authorize experimental shellfish or finfish aquaculture sites or sites involving new technologies.[262] Following the expiration of the initial development license, it can be renewed once for another five-year term if the site is still under development; if not, the initial development license is generally followed by a twenty-year lease for finfish operations or a thirty-year lease for shellfish operations.[263]

One emerging wrinkle in British Columbia's legal framework for aquaculture, however, is that Prime Minister Justin Trudeau has instructed Fisheries Minister Bernadette Jordan to come up with a plan to transition away from open net-pen salmon farming in British Columbia by 2025.[264] This instruction comes alongside Prime Minister Trudeau's efforts to implement Canada's first federal aquaculture legislation, the Federal Aquaculture Act, which remains under consideration by the Parliament of Canada as of this article's publication.[265]

D. Denmark

There are scant English-language resources available on the legal framework for offshore aquaculture in Denmark, but the details that can be accessed provide insight into a different approach. Marine aquaculture in Denmark is regulated by a combination of the 1991 Regulation on the Establishment and Operation of Ocean Farms and Chapter 13 of the Fisheries Act

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[260] *See id.*
[261] *Id*.
[262] *Id*.
[263] *See id.;* Standing Senate Committee on Fisheries and Oceans, *supra* note 256, at 11.
[264] Mandate Letter from Justin Trudeau, Prime Minister, to Bernadette Jordan, Minister of Fisheries, Oceans, and the Canadian Coast Guard (Dec. 13, 2019), https://pm.gc.ca/en/mandate-letters/2019/12/13/minister-fisheries-oceans-and-canadian-coast-guard-mandate-letter.
[265] Press Release, Fisheries and Oceans Canada, Minister Jordan meets with provincial ministers from Eastern Canada responsible for Fisheries and Aquaculture (June 18, 2021), https://www.newswire.ca/news-releases/minister-jordan-meets-with-provincial-ministers-from-eastern-canada-responsible-for-fisheries-and-aquaculture-891665932.html; *see* FISHERIES AND OCEANS CANADA, A CANADIAN AQUACULTURE ACT (2020), https://www.dfo-mpo.gc.ca/aquaculture/act-loi/doc/Aquaculture-Act-Discussion-Paper-2020_en.pdf.

of 2004.[266] Under this framework, offshore aquaculture operations must obtain a license from the Danish Directorate of Fisheries.[267] The application for a marine aquaculture license is considered to be an application for all of the permits that operations need under relevant legislation.[268] Notably, whereas the Danish Directorate of Fisheries previously used a location-oriented license that had a duration of ten years to authorize marine aquaculture operations, it has since switched to an environmentally oriented license for which the Directorate has greater discretion and flexibility in determining the duration.[269]

Unique among the jurisdictions surveyed in this article, Denmark has legal provisions in place concerning aquaculture operations' ability to access capital. For instance, in accordance with the Act on Structural Assistance in the Fisheries Sector, Danish aquaculture is eligible for funding from the Financial Instrument for Fisheries Guidance.[270] These funds are distributed to operations for the purpose of ensuring that they contribute to environmentally and economically sustainable development of the sector, as well as promoting the production of high quality fish and fish products.[271] Moreover, the Danish government has created the Fisheries Bank of Denmark (FBD) to grant long-term loans to participants in the Danish fishing and aquaculture industries.[272] The governing framework distinguishes between loans for which real property is provided as collateral and loans for which any other kind of property or investment is provided as collateral. If real property is provided as collateral for an FBD aquaculture loan, the value of loan may be up to 60% of the mortgage value and the debtor has twenty years to repay the loan.[273] Like loans collateralized with real property, FBD aquaculture loans that are collateralized with some other form of

[266] *National Aquaculture Legislative Overview: Denmark*, FOOD & AGRIC. ORG., http://www.fao.org/fishery/legalframework/nalo_denmark/en (last visited Aug. 23, 2021).
[267] *Id*.
[268] *Id*.
[269] *See id*.; Lisbeth Jess Plesner, State of Play – Aquaculture and Its Legislation in Denmark, Dansk Akvakultur (Feb. 2020), https://submariner-network.eu/images/Denmark.pdf.
[270] Act on Structural Assistance in the Fisheries Sector (2001, as amended in 2002). (Bekendtgørelse af lov om strukturforanstaltninger vedrørende fiskerisektoren, LBK nr. 316 af 03/05/2001, as amended in 2002); *see National Aquaculture Legislative Overview: Denmark*, *supra* note 266.
[271] *National Aquaculture Legislative Overview: Denmark*, *supra* note 266.
[272] Act relative to The Fisheries Bank of Denmark (2001) (Bekendtgørelse af lov om Kongeriget Danmarks Fiskeribank, LBK nr 92 af 08/02/2001); *see id*.
[273] *National Aquaculture Legislative Overview: Denmark*, *supra* note 266.

property may be worth up to 60% of the value of the property or investment; however, the term for repayment is only ten years, as compared to twenty.[274]

VIII. PROPOSAL CURRENTLY UNDER CONSIDERATION BY CONGRESS – THE AQUAA ACT

The Advancing the Quality and Understanding of American Aquaculture Act (AQUAA) is a proposed bill that would create a regulatory regime for offshore aquaculture in the U.S. Although originally introduced by Senator Roger Wicker of Mississippi in 2018, an updated version of AQUAA was reintroduced in the House of Representatives by Minnesota Rep. Collin Peter in March 2020. This analysis considers only the latter, more recent proposal.

Under AQUAA, offshore aquaculture permits would be administered by the Secretary of Commerce through a newly created NOAA Office of Offshore Aquaculture.[275] Applications for these permits would need to specify:

> (A) the proposed location of the offshore aquaculture facilities and the location of any onshore facilities;
> (B) the type of aquaculture operations that will be conducted at all facilities...;
> (C) the cultured species, or specified range of species, to be propagated or reared, or both, at the offshore aquaculture facility;
> (D) the ways in which the permit holder will comply with the national standards for sustainable offshore aquaculture described in section 101;
> (E) plans to respond to - (i) natural disaster; (ii) escapement; and (iii) disease; and
> (F) such other design, construction, and operational information as the Secretary may require….[276]

Additionally, permit holders would need to be a citizen or permanent resident of the U.S., or a domestically organized entity that is not state-owned.[277] Under AQUAA, permit holders would also need to post a bond or other form of

[274] *Id*.
[275] Advancing the Quality and Understanding of American Aquaculture Act, H.R. S.4723 § 401(a), 116th Cong. (2020) [hereinafter AQUAA Act].
[276] *Id.* § 201(c).
[277] *Id.* § 201(d).

financial guarantee that is sufficient to cover the cost of facility removal and site remediation upon the expiration or revocation of the permit, as well as any unpaid fees.[278]

AQUAA requires the Secretary of Commerce to develop enterprise zones, which would be areas of the EEZ with conditions that are highly favorable for offshore aquaculture and offer a streamlined permitting process for applicants.[279] Applicants, however, would still be able to propose sites for offshore aquaculture facilities outside of these areas. Permits for facilities and operations within enterprise zones would last twenty-five years; for facilities and permits outside of enterprise zones, they would only last fifteen years.[280] Upon their expiration, permits could be renewed for a period equal to their original duration.[281] Separately, the permit could be revoked if the permit holder commits a variety of prohibited acts, fails to begin offshore aquaculture operations within two years of receiving the required federal permits, or interrupts aquaculture operations for at least two years due to reasons unrelated to best management practices or a federal disaster declaration.[282] Permit holders would be required to remove all structures, gear, and other property, as well as restore the site, within one year of an offshore aquaculture permit's expiration or revocation.[283]

Although AQUAA allows for offshore aquaculture facilities to be sited in areas that are currently leased under the OCSLA with the lessee's permission[284] and also provides the Secretary of Commerce with the authority to "enter into and perform such contracts, leases, or cooperative agreements […] as may be necessary to carry out [AQUAA],"[285] the bill does not explicitly provide for any mechanisms that would allow for the leasing of EEZ waters to the holders of offshore aquaculture permits.[286] While the absence of a lease from the AQUAA Act by no means suggests that its drafters failed to consider a lease as an authorization instrument for offshore aquaculture, this absence nevertheless

[278] *Id.* § 201(j)(3).
[279] *Id.* §§ 202(a)(4), 202(c)(1).
[280] *Id.* § 201(e).
[281] *Id.* § 201(f).
[282] *Id.* § 201(g).
[283] *Id.* § 201(h).
[284] *Id.* § 201(n)(2).
[285] *Id.* § 404(b).
[286] *See id.* § 3(8) ("The term 'lessee' means any party to a lease, right-of-use and easement, or right-of-way, or an approved assignment thereof, issued pursuant to the Outer Continental Shelf Lands Act […].").

speaks to the wide range of property rights issues that are not currently being considered by Congress in the conversation around this increasingly important issue.

IX. APPLICABILITY OF MODELS TO OFFSHORE AQUACULTURE IN U.S. EEZ

The need for clarity concerning the authorization process for aquaculture operations in the EEZ and the property rights that it confers is paramount. As federal policymakers and other interested stakeholders consider how to reform the current legal framework or create a new one specific to aquaculture, their deliberations will undoubtedly be informed by the successes and failures of the various regimes that are in use for aquaculture domestically and abroad, as well as the strengths and weaknesses of the regimes in place for authorizing other commercial activities on federal lands. The following section identifies aspects of the regimes discussed above from which the federal framework for offshore aquaculture would likely benefit by incorporating, as well as broader lessons and insights from those models that are relevant to authorizing aquaculture in the EEZ.

A. Lessons from OCSLA: Damages for Cancellation of Leases in Federal Waters

As noted above, government entities tend to have greater discretion in suspending or cancelling permits than they do for leases. And, when each instrument is finally cancelled, a lessee is generally compensated in the event that their lease is cancelled, whereas permittees have not traditionally been afforded this protection. OCSLA provides a thorough set of conditions under which suspension or cancellation is appropriate, and also compensation to lessees in the event their lease is cancelled.

Similarly, the federal framework for authorizing aquaculture in the EEZ should have clear terms concerning the suspension and cancellation of permits, which provides more predictability and stability to operators and allows for more efficiency in the agency's administration and enforcement of the authorization mechanism in use. Furthermore, as the framework for the only other stationary commercial activity that currently takes place in offshore federal waters, OCSLA requires the government to provide a lease to operators, which in turn requires lessees to be compensated if their leases are cancelled. Federal policymakers may want to consider providing compensation to aquaculture operations in the EEZ if

their authorization instrument—regardless of whether it is termed a permit or a lease—is cancelled. More analysis concerning the compensability of cancelled instruments can be found below in Section IX(C) (Lessons from Grazing).

B. Develop Aquaculture Enterprise or Development Zones in the EEZ

Some states, like New Jersey, have developed aquaculture enterprise or development zones to help ease the permitting process and minimize user conflicts. For instance, the ADZ is intended to ease permitting burdens on potential oyster farms and locate farms in areas with the fewest use conflicts. The ADZ is meant to streamline the permitting process for farmers, as the New Jersey Bureau of Shellfisheries obtains the necessary permits from the Corps and relevant state agencies on behalf of the individual growers. Grouping multiple aquaculture farms allows the state to manage aquaculture operations effectively, as well as help harvesters share upland access to farms, and access seed, equipment, and technical support for their farms. Establishing a similar model on the federal scale, as the AQUAA Act would, may help the authorization of aquaculture in U.S. federal waters. Additionally, all of the legal frameworks that authorize the use of federal lands for commercial activities involve a planning process that identifies areas that will be targeted for use. Especially in light of how vast the U.S. EEZ is, engaging in a similar planning process for offshore aquaculture would help minimize conflicts with other users of the space.

A project to this effect has recently been undertaken by NOAA at the behest of President Trump.[287] The agency is currently in the process of identifying Aquaculture Opportunity Areas (AOAs) in the U.S. EEZ that are suitable for the siting of multiple commercial aquaculture facilities.[288] Environmental assessments required by NEPA will be performed for each AOA, rather than each aquaculture facility therein, which reflects an interest in a more efficient and streamlined permitting process.[289] NOAA's mandate specifically instructs the agency "to minimize unnecessary resource use conflicts" in selecting the AOA sites.[290] Although the Executive Order which prompted NOAA's identification of AOAs did not formally alter the agency's role in the offshore aquaculture permitting process, this project nevertheless represents a valuable step towards learning from the lessons imparted by the management frameworks for other commercial uses

[287] Exec. Order No. 13,921, Promoting American Seafood Competitiveness and Economic Growth, 85 Fed. Reg. 28,471 (May 7, 2020).
[288] *Id.* § 7(a).
[289] *Id.* §§ 1, 7(a)-(b).
[290] *Id.* § 7(c).

of federal lands. But as of the time of this article's publication, the timeline for and legal status of AOAs more generally remains unclear while the Biden administration continues its review of Trump-era policies.[291] Additionally, the AQUAA Act calls for the creation of "enterprise zones" for aquaculture in the EEZ,[292] and it is unclear what the relationship between these aquaculture enterprise zones and NOAA's AOAs would be in the event that Congress enacts the AQUAA Act.

C. Lessons from Grazing

Although the terms "marine aquaculture" and "ocean ranching" are by no means synonymous in the strictly scientific sense,[293] it is no coincidence that the terms are sometimes used interchangeably in colloquial language and legal scholarship.[294] Grazing and marine aquaculture are similar in the sense that both are commercial activities that rely on natural resources and, rather uniquely, involve an operator raising animals that they own on (and using the resources of) lands—submerged or otherwise—that the operator does not own or possess. In that respect, the federal framework for grazing might be able to inform its counterpart for offshore aquaculture because of the similarities between the pasture Rest-Rotation system described above and mobile marine aquaculture operations, which are an emerging interest in the aquaculture community.[295]

Moreover, federal policymakers may be able to find the federal grazing framework's use of instruments termed "leases" and "permits" applicable to aquaculture in the EEZ. More specifically, as noted above, the primary difference

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[291] H. David Gold, et al., *Biden Administration Begins Comprehensive Review of Trump-Era Environmental Rules*, JD SUPRA (Jan. 22, 2021), https://www.jdsupra.com/legalnews/biden-administration-begins-1601137/; *see* Oil and Gas and Sulfur Operations in the Outer Continental Shelf - Revisions to the Requirements for Exploratory Drilling on the Arctic Outer Continental Shelf, 86 Fed. Reg. 34,172 (June 29, 2021).

[292] *See* AQUAA Act, *supra* note 275, at § 202.

[293] *See* R. Arnason, *Introduction*, *in* THE ECONOMICS OF OCEAN RANCHING: EXPERIENCES, OUTLOOK, AND THEORY, FAO FISHERIES TECHNICAL PAPER NO. 413, FOOD & AGRIC. ORG. (2001), http://www.fao.org/3/Y1805E/y1805e06.htm#TopOfPage (explaining that "ocean ranching is a type of fish farming in which juvenile fish are released into the ocean to grow unprotected and unassisted to be subsequently harvested.").

[294] *See*, *e.g.*, Babcock, *supra* note 54, at 4-6.

[295] *See* Liu Zhen, *China's giant aquaculture ship can help the environment and South China Sea ties, expert says*, SOUTH CHINA MORNING POST (June 5, 2020), https://www.scmp.com/news/china/diplomacy/article/3087801/chinas-giant-aquaculture-ship-can-help-environment-and-south.

between BLM grazing leases and BLM grazing permits is that leases are the authorization instruments used for grazing on parcels of land that are isolated from pre-established grazing districts.[296] This setup is particularly apt for managing aquaculture in the EEZ through a system that also incorporates aquaculture enterprise/development/opportunity zones, which would be analogous to grazing districts. Under such a framework, aquaculture operations located within an enterprise/development/opportunity zone would be issued a permit, while operations that choose a site outside of one of these zones would be issued a lease.

Additionally, there are two features of federal grazing permits that would address two of the major property rights concerns that have been voiced by the industry and legal literature. First, even though a grazing permit must accommodate prior uses of the permitted area and does not grant the permittee any right to exclude others from the permitted area, the Taylor Act requires the federal government to not only refrain from invading the grazing rights of lessees and permittees, but also to adequately safeguard them.[297] The inclusion of such a provision in the federal framework for aquaculture in the EEZ could assuage industry's concerns about site control. Furthermore, in light of the additional protections that a lease traditionally confers to the lessee in the event of cancellation by virtue of being a contract, policymakers should note that cancellation of *both* a grazing lease *and* a grazing permit entitles the instrument holder to compensation, and the formula for compensation is the same for both instruments.[298] It is therefore clear that policymakers could extend some of the enhanced protections typically associated with leases to permits under the current or future federal framework for offshore aquaculture if they so choose.

D. Lessons from Offshore Renewable Energy

There are various parallels between the development of the legal framework for offshore aquaculture and that of offshore energy development on the OCS. First, amid the initial lack of clarity surrounding the regulatory framework and authorization mechanism for offshore wind in federal waters, the Corps initially claimed authority as the lead permitting agency under RHA Section 10. But even after this path was eventually carved out, the significant amount of time and resources that it took for the Cape Wind project to become a

[296] *See* 43 U.S.C. §§ 315, 315b, 315m.
[297] *See* Oman et al. v. U.S., 179 F.2d 738 (10th Cir. 1949).
[298] *See* 43 U.S.C. § 1752(g).

reality underscores the extreme difficulty that applicants face in getting a project authorized when there is not a clear authorization mechanism for federal agencies to use. And, despite the emergence of that Corps-led path, Congress eventually enacted legislation (the EPAct) to not only dispel regulatory uncertainty, but also to convey security of tenure for the industry through leases and ensure that a federal agency—DOI, rather than the Corps—has the legal authority to issue those leases.

The parallels between offshore wind production and offshore aquaculture are magnified by the intriguing possibility of co-locating aquaculture facilities and offshore wind turbines once technology allows.[299] In fact, the current statutory framework is already equipped to accommodate co-location of offshore sites from these industries. As mentioned earlier, the EPAct also gave DOI the authority to allow for alternate uses of existing oil and gas facilities on the OCS. BOEM has indicated that offshore aquaculture could be one of these alternative uses.[300] Consequently, BOEM already has the implicit authority to issue leases for aquaculture operations located in the EEZ, although the agency has not yet exercised its authority to authorize offshore aquaculture in this manner.

As federal policymakers navigate the future of authorizing aquaculture operations in the U.S. EEZ, there are two reasons that they may want to do so with an eye towards how the legal framework for producing wind and other renewable energies on the OCS developed. First, the latter may offer a playbook for clarifying and transforming the regulatory scheme for an ocean-intensive commercial activity that is increasingly important for the U.S. moving forward in light of current environmental realities. Additionally, given the very real possibility of interest in offshore aquaculture facilities and offshore energy turbines being co-located in the future, substantial divergences or irreconcilability between the two authorization frameworks may only serve to recreate for offshore hybrid energy-aquaculture facilities the very same regulatory uncertainty that once plagued wind energy operations on the OCS and continues to cause controversy around aquaculture in the EEZ.

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[299] *See* Robin Kundis Craig, *Harvest the Wind, Harvest Your Dinner: Using Law to Encourage an Offshore Energy-Food Multiple-Use Nexus*, 59 JURIMETRICS 61 (2018); AQUACULTURE PERSPECTIVE OF MULTI-USE SITES IN THE OPEN OCEAN, *supra* note 186, at 191-95.

[300] *Renewable Energy on the Continental Shelf*, BUREAU OF OCEAN ENERGY MGMT., https://www.boem.gov/renewable-energy/renewable-energy-program-overview (last visited Aug. 23, 2021).

X. CONCLUSION

Aquaculture is a growing industry in the United States, and one whose importance is only likely to grow as the nation contemplates how to best leverage its natural resources to achieve food security for its population. Encouraging aquaculture in the U.S. EEZ is an attractive option, and one that the U.S. is legally entitled to pursue under both international law and its own domestic legal framework. However, there is currently no statute that unifies or delineates the permit application process for operations in federal waters, and this has created a confusing overlap of statutes that has deterred such operations. Moreover, even if the permitting process is improved, the property rights of aquaculture operations in the EEZ must also be revisited and resolved. As reflected by OCSLA and the EPAct, federal legislation will be required to lease resources in the EEZ—such as the seabed and the water column—to aquaculture operations. But it is unclear whether a new federal instrument for offshore aquaculture, regardless of whether it is substantially a permit or a lease, is legally necessary or politically feasible. As the federal government weighs how to best proceed with its approach to aquaculture in the EEZ, it may want to draw on valuable lessons learned from models developed by domestic states and foreign governments that have already tackled this process under their own respective legal frameworks.