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THE REGULATORY STATE AND THE EMERGING OFFSHORE WIND ENERGY MARKET IN THE UNITED STATES

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Offshore wind energy technologies are generally regarded as variable baseload systems. They could therefore serve a crucial role in a net-zero or carbon-neutral electricity supply grid. With the spate of growing commercial and government-policy interests in offshore wind, it is important to examine how and to what extent the framework of assessing and reviewing project plans, as well as the process of engaging with impacted stakeholders or alternative users of the outer continental shelf, can become more efficient and less controversial. Thus, this paper discusses the emerging offshore wind energy market in the U.S. and highlights the role of the regulatory state in facilitating a more efficient leasing and permitting process for projects without compromising the protections afforded under applicable laws and regulations. Adopting a thorough yet standardized review of relevant project plans and proactive stakeholder engagement processes is recommended at an early or appropriate time during the permitting process. Understanding the opportunity costs of delayed and canceled projects, addressing misperception of risks, and standardizing best practice measures for resolving common issues could make project review process(es) more efficient. Considering experiences in other jurisdictions such as the UK, such efficiency gains are achievable while protecting the environment and legitimate interests of other users in the outer continental shelf.

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I. Introduction

Like most other multifaceted industrial developments, it could be considered reasonable to slow down the process of permitting an energy supply project to ensure a thorough assessment of its social, environmental, and economic impacts and provide appropriate mitigation measures accordingly. However, in an emerging industry such as offshore wind in the United States— where policymakers continue to issue plans, incentives, and significant development targets—there are arguably some opportunity costs for unnecessary delays, cumbersome bureaucratic bottlenecks, inefficiencies, or failure to timely settle avoidable controversies amongst stakeholders.[1] Such counterproductive implications or neglected opportunity costs could mean under-investments in projects or cancelations, thus leading to an inability to meet future clean energy policy targets. There is also the likelihood of fostering an overburdened and costly regulatory state dealing with the same or similar issues multiple times during the planning, leasing, and development of an offshore clean energy project. To make the process more efficient, the paper recommends (i) a compressive and standardized approach to reviewing Site Assessment Plans and the Construction and Operations Plan; and (ii) ensuring proactive stakeholder engagement processes

[1] Opportunity costs represent the potential benefits that an individual, investor, or business misses out on when choosing one alternative over another. Because opportunity costs are unseen by definition, they can be easily overlooked. Understanding the potential missed opportunities when a business or individual chooses one investment over another allows for better decision-making.

at an early or appropriate time during the permitting process. All parties need to clearly understand the opportunity costs of delayed and canceled projects. At the same time, the regulatory state plays a key role in gathering relevant information to address the possible misperception of risks and standardizing best practice measures for addressing common issues often identified from environmental reviews and impact assessment processes. Such standards and identified mitigation measures acceded to by all or the majority of stakeholders could help prevent costly and avoidable legal controversies.

The regulatory state encompassing executive agencies and institutions in key sectors of the economy plays an essential role in balancing competing interests in regulated industries such as energy. These institutions and agencies are often required to carry out conciliatory or quasi-judicial functions while making prescriptive or standard-setting rules.[2] Such functions are based on the regulatory state's authority, as defined by law and regulations. To be effective, regulatory agencies and institutions must make informed and unarbitrary decisions promptly and cost-effectively. For example, in the energy context, say there are four facilities required to supply a given amount of adequate, reliable, and reasonably affordable electricity right now and over the next ten to twenty years. But due to some policy targets and technicalities, two new projects must be completed in the next nine years to augment the service provided by one or two 'existing' facilities that would be retired in the same period. The regulatory state cannot be said to have succeeded in its role if the industry and market are unable to deliver those two new projects at the right time and scale and in compliance with relevant environmental or administrative rules and regulations.

The regulatory agencies established to implement government policy and laws enacted by Congress have the arduous task of acting efficiently and functionally. They are also expected to act independently or as apolitically as possible. In most cases, the context can be as controversial as building an onshore wind turbine along the path of migratory birds, or offshore turbines that may impact existing interests such as commercial fishing and navigation.[3] As a result, realizing policy objectives

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[2] David Bach and Abraham Newman, *Regulatory State*, ENCYCLOPEDIA BRITANNICA, (Nov. 26, 2014), https://www.britannica.com/topic/regulatory-state; Christopher DeMuth, *The Regulatory State*, National Affairs Summer 2012, https://www.nationalaffairs.com/publications/detail/the-regulatory-state.

[3] Cass R. Sunstein, *Interpreting Statutes in the Regulatory State*, 103 HARV. L. REV. 405 (1989). The US federal government substantially increased its regulatory responsibilities in the 1960's and 1970's, by moving to protect the interests of consumers, the national environment, victims of discrimination, etc. Consequently, the regulatory state that emerged represents a shift in both the substance of law and the institutions through which law is made and enforced, and the sheer volume of federal statutes and regulations that have dramatically changed the business of the federal courts. Regulatory institutions reflect prevailing legal understanding about the fair and effective process and should be well equipped and be able to address problems such as those created by political economy issues creating misalignment of stakeholder interests, misperception of risks, informational gaps, etc. that may affect the growth and emergence of the types of technologies and market required to realize policy objectives. *See also* Julie E. Cohen, *The Regulatory State in the Information Age*, 17 THEORETICAL INQ. L. 369 (2016). Gary M. Lucas, Jr. & Slavisa Tasic, *Behavioral Public Choice and the Law*, 118 W. VA. L. REV. 199-266 (2015);

such as affordability and reliability of energy supply—as well as ensuring protection from environmental externalities in the energy context in which there is a constant need for mobilizing timely investments in capital-intensive technologies (e.g., floating offshore wind turbines) at the same time— presupposes a thorough understanding of how the systems, the industry, and the market is regulated, and how stakeholders are engaged. The complexity of the challenge implies that the relevant agencies and institutions would need to pragmatically engage with the intended regulated activity and stakeholders to be effective.[4] Thus, this paper discusses the emerging offshore wind energy market in the U.S. and highlights the role of the regulatory state accordingly.

The Atlantic and Pacific regions of the U.S. Outer Continental Shelf (OCS)[5] have significant potential for utility-scale offshore wind energy projects.[6] Offshore wind facilities have several pros and cons as an energy supply technology. Their main advantage is having a higher capacity factor than other renewable energy technologies like Solar Photovoltaic (PV).[7] Thus, offshore wind energy adds considerable value and has a higher potential to serve as a "variable baseload" technology for the future net-zero electricity grid.[8] However, the main 'con' is that

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David B. Spence & Frank Cross, *A Public Choice Case for the Administrative State*, 89 GEO. L.J. 97 (2000).

[4] TADE OYEWUNMI, REGULATING GAS SUPPLY TO POWER MARKETS: TRANSNATIONAL APPROACHES TO COMPETITIVENESS AND SECURITY OF SUPPLY (2018).

[5] The U.S. Outer Continental Shelf (OCS) includes the area between state jurisdiction to 200 nautical miles (nm) from shore. State jurisdiction over the seafloor extends from the shoreline out to three nm, except for Texas and the Florida Gulf Coast, which extend out to nine nm. The 200-nm seaward boundary may occasionally differ depending on an area's geography and geology. *See* Bureau of Ocean Energy Mgmt., *Outer Continental Shelf* www.boem.gov/environment/outer-continental-shelf (last visited Oct. 15, 2021).

[6] LAURA B. COMAY & CORRIE E. CLARK, CONG. RSCH. SERV. R46970, OFFSHORE WIND ENERGY: FEDERAL LEASING, PERMITTING, DEPLOYMENT, AND REVENUES, (updated December 7, 2021); *See* Toks A. Arowojolu, et al., *Offshore Wind Handbook*, K&L Gates, (Oct. 2019), www.klgates.com/files/uploads/documents/2019_offshore_wind_handbook.pdf; Taylor J. LeMay, *Offshore Wind: Lessons from Abroad*, 7 LSU J. ENERGY L. & RESOURCES 159 (2019); Nicolas Martino, *Offshore Wind Energy: Sophisticated Technology Struggling with Outdated Legislation*, 58 JURIMETRICS 59 (2017).

[7] Capacity is the amount of electricity a generator can produce when it's running at full blast. This maximum amount of power is typically measured in megawatts (MW) or kilowatts (kW) and helps utilities project just how big of an electricity load a generator can handle. The "Capacity Factor," on the other hand, is a measure of how often a power plant runs for a specific period. It's expressed as a percentage and calculated by dividing the actual unit electricity output by the maximum possible output. This ratio is important because it indicates how fully a unit's capacity is used. *See* U.S. Dep't of Energy (DOE), *What is Generation Capacity?* (May 1, 2020), https://www.energy.gov/ne/articles/what-generation-capacity.

[8] In 2018, the average global capacity factor for offshore wind turbines was 33 percent compared with 25 percent for onshore wind turbines and 14 percent for solar PV. New offshore wind projects have capacity factors of 40 to50 percent, as larger turbines and other technology improvements are helping to make the most of available wind resources. At these levels, offshore wind matches the capacity factors of efficient gas-fired power plants, and coal-fired power plants in some regions exceed those of onshore wind and are about double those of solar PV. *See* THE INTERNATIONAL ENERGY AGENCY (INT'L ENERGY AGENCY, OFFSHORE WIND OUTLOOK 2019 (2019), www.iea.org/reports/offshore-wind-outlook-2019.

offshore wind systems' energy output—like most other systems based on intermittent sources—varies according to the strength of the wind and location. Nevertheless, on an hourly basis, the variability for offshore wind is reported as typically lower compared to Solar PV This is perhaps the reason for the growth and investments in offshore wind projects globally, especially in jurisdictions like the United Kingdom., China, and Denmark. Other reasons driving the increase include the falling costs, technological improvements, and the systemic value it adds to the energy supply mix as countries and investing companies aim for their respective net-zero decarbonization targets.[9]

In the U.S., there has been considerable policy support and interest in wind energy, especially in states with potential utility-scale developments, such as Texas and Iowa for onshore projects and Massachusetts, Virginia, California, Oregon, and New York for offshore wind projects. However, most offshore projects have faced delays and opposition from some stakeholders and constituents whose economic, social, aesthetics or recreational interests may be threatened if not adequately considered in the development process.[10] Generally, the process of planning and leasing, site assessment to construction, and operation of offshore wind projects in the U.S. could go on for about ten to eleven years or more, depending on the effectiveness of the regulatory state.[11] Such lengthy timelines, the risk of controversies, and the misalignment of interests amongst stakeholders could easily impact the costs and deliverability of electrons to power markets from the planned projects.

Part II of this paper highlights the growing interest in harnessing wind energy from offshore areas in the U.S. It then discusses the framework for permitting

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[9] *Id*. ("Offshore wind typically fluctuates within a narrower band, up to 20 percentfrom hour to hour, than is the case for solar PV, up to 40 percentfrom hour to hour.")

[10] *See* Kenneth Kimmell & Dawn Stolfi Stalenhoef, *The Cape Wind Offshore Wind Energy Project: A Case Study of the Difficult Transition to Renewable Energy*, 5 GOLDEN GATE U. ENV'T L.J. 197 (2011); Benjamin Storrow, *Solar executive with ocean views sues Vineyard Wind*, CLIMATEWIRE (July 20, 2021) https://www.eenews.net/articles/solar-executive-with-ocean-views-sues-vineyard-wind/; Wayne Parry, *They're not blown away by N.J.'s offshore wind power plans*, ASSOC. PRESS (July 17, 2021), https://apnews.com/article/business-environment-and-nature-climate-change-wind-power-e8b2382286f3659cce2d40a99f5a24fc ; Jeffrey Tomich, *Ind. experiment highlights wind siting challenge,* ENERGYWIRE (May 18, 2022), https://www.eenews.net/articles/ind-experiment-highlights-wind-siting-challenge/; David Larson, *Offshore wind turbines interfere with ships' radar, ability to navigate, study finds,* CAROLINA JOURNAL, (Mar. 9, 2022), https://www.carolinajournal.com/offshore-wind-turbines-interfere-with-ships-radar-ability-to-navigate-study-finds/. *See also* the following cases showing some of the controversies regarding permitting and leasing for offshore Wind projects over the years- Protect Our Cntys. Found. v. Jewell, 825 F.3d 571 (9th Cir. 2016); Pub. Emps. for Env't. Resp. v. Beaudreau, 25 F. Supp. 3d 67 (D.D.C. 2014); Pub. Emps. for Env't. Res. v. Hopper, 827 F.3d 1077 (D.C. Cir. 2016); Fisheries Survival Fund v. Jewell, No. 16-cv-2409 (TSC), 2018 U.S. Dist. LEXIS 168532, at *3 (D.D.C. Sep. 30, 2018), , aff'd sub nom. Fisheries Survival Fund v. Haaland, 858 F. App'x 371 (D.C. Cir. 2021), and aff'd sub nom, Fisheries Survival Fund v. Haaland, 858 F. App'x 371 (D.C. Cir. 2021).

[11] *See* Figure 2 infra. *See also* 'Phases of BOEM's approvals for offshore wind projects' in *Offshore Wind Handbook*, K&L Gates, Version 2, (Oct. 2019) at 52, www.klgates.com/files/uploads/documents/2019_offshore_wind_handbook.pdf; Kimmell & Stalenhoef, *supra* note 10 on the Cape Wind example.

offshore wind projects with examples from the Northeast, including the energy policy implications for delivering clean energy to the respective wholesale markets that the projects will serve.

From reviewing the background leading to selected cases and decisions made, Part III examines the regulatory environment for leasing, sitting, and permitting, encompassing the stages of planning and analysis, leasing, site assessment, construction, and operating plan. It highlights the tensions between the various stakeholders involved in developing offshore wind projects such as commercial fishing, migratory birds, endangered species, and maritime risks. It underscores how information and perception of various risks influence relevant stakeholders in dealing with the appropriate tradeoffs. It concludes by discussing the need for planning new interconnections with wholesale markets and the grid.

Part III concludes with a discussion on the role of institutional platforms in facilitating the gathering and sharing of essential information among stakeholders and decision-makers. In this regard, it considers the role of Renewable Energy Task Forces in the U.S. with the example of Oregon, as the state and coastal communities and stakeholders consider the implications of developing offshore wind resources.

Part IV explores costs and integration issues and streamlines the regulatory process to promote efficiency and avoid unnecessary delays while complying with the applicable laws and regulations. It highlights developments in the U.K., one of the major offshore wind jurisdictions.

Part V concludes and highlights the role of the regulatory state within an emerging offshore energy market that promises to play a major role in meeting future energy needs in the U.S.

II. Harnessing Offshore Wind Energy

Electricity generation from wind energy has increased significantly in the U.S. since the 2000s, although this has been primarily from onshore projects.[12] In 2021 alone, wind energy accounted for about 9.2 percent of total U.S. utility-scale electricity generation, while 27 percent of the total amount of renewable energy consumed in the U.S. in 2021 came from wind turbines.[13] Energy from wind in this context has been mainly from onshore production, while offshore developments have faced delays and various regulatory complexities. For instance, the Cape Wind project on the east coast—offshore Massachusetts—would have been one of the world's biggest wind energy projects if it had been completed as planned. Even though the formal permitting of the project began in 2001 with the

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[12] "Total annual U.S. electricity generation from wind energy increased from about 6 billion kilowatt-hours (kWh) in 2000 to about 380 billion kWh in 2021." *See* U.S. Energy Info. Admin. (EIA), *Wind explained: Electricity generation from wind* (last updated Mar. 20, 2022) https://www.eia.gov/energyexplained/wind/electricity-generation-from-wind.php.

[13] According to the US EIA, renewable energy sources (which includes biomass, hydroelectricity, solar, geothermal, and wind) accounted for 12% of total primary energy consumption by energy source, 2021. *See* U.S. EIA, *Renewable Energy Explained* (last updated June 10, 2022), eia.gov/energyexplained/renewable-sources/.

environmental review under the National Environmental Policy Act (NEPA)[14] and the Massachusetts Environmental Policy Act, the Department of Interior (DOI) approved the project's commercial lease in 2010. The project was stalled for over a decade by the cumbersome permitting process and opposing interest groups.[15] Consequently, Cape Wind Associates (CWA, i.e., the main project sponsor) and utilities that would have received the energy produced eventually terminated their power purchase agreements (PPAs) in 2015.

More recently, there has been a gradual increase in commercial and policy-level interests in harnessing offshore wind resources. However, regulatory uncertainty and unnecessary protracted controversies can 'kill' investor appetite and the commerciality of projects that otherwise would have been successful. In the Wind Vision Roadmap Strategic Approach report (2008-2050), the U.S. Department of Energy (DOE) envisages a continued increase in the share of wind energy in the national energy mix. The Wind Vision details an outlook for establishing offshore wind markets and supply chains in multiple regions, including the West and East coast, the Great Lakes, and the Gulf of Mexico.[16] It is noted that the Biden administration plans to facilitate the development of 30 Gigawatts (30,000 megawatts) of offshore wind by 2030 as part of a major jobs creation, clean energy, and economic plan.[17] Similarly, several projects have been developed or are under development, in state-owned or federally owned waters, including the five-turbine Block Island Wind Farm off Rhode Island, which began commercial operations in 2016, a two-turbine pilot project off the coast of Virginia, and Vineyard Wind, on a federal lease off the coast of Massachusetts. The DOI's Bureau of Ocean Energy Management (BOEM) has also undertaken pre-leasing evaluations in the Pacific region and has solicited interest in potential offshore wind development in the Gulf of Mexico region.

The federal incentive schemes and coastal states with various renewable or clean energy targets are some of the main factors driving investments and growing commercial interests in offshore wind projects.[18] The emerging industry has benefited significantly from regulatory incentives such as the federal Production

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[14] The National Environmental Policy Act (NEPA) establishes a framework through which public officials and agencies can make decisions based on a complete understanding of environmental consequences and take actions that protect, restore, and enhance the environmental concerns. 42 U.S.C. §§ 4321–4347.

[15] Kimmell & Stalenhoef, *supra* note 10. *See, e.g.*, Pub. Emps. for Env't. Resp. v. Beaudreau, 25 F. Supp. 3d 67 (D.D.C. 2014).

[16] Dept. of Energy, *Wind Vision: A New Era for Wind Power in the United States*, Apr. 2015, https://www.energy.gov/eere/wind/maps/wind-vision (last visited May 18, 2022).

[17] The White House, *Biden Administration Jumpstarts Offshore Wind Energy Projects to Create Jobs*, (Mar. 29, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/29/fact-sheet-biden-administration-jumpstarts-offshore-wind-energy-projects-to-create-jobs/ (last visited May 18, 2022)

[18] *See* North Carolina Clean Energy Technology Center, *Database of State Incentives for Renewables & Efficiency (DSIRE) Summary Maps,* https://programs.dsireusa.org/system/program/maps (last visited May 18, 2022). It is noted that consumers, utilities, and system operators of the transmission networks within such states also comprise the wholesale energy markets that will be served by these offshore projects. *See* Hayden S. Baker, *Clean/Renewable Energy M&A Trends and Best Practices* (Mar. 26, 2018).

Tax Credit (PTC) and complementary state-level incentives that helped offset development costs.[19] The Taxpayer Certainty and Disaster Tax Relief Act of 2020 extended the deadline for eligible systems to qualify for PTCs. As a result, wind projects started in either 2020 or 2021 will be eligible for a PTC at 60 percent of the full rate on the electrical output for ten years.[20] Regarding offshore wind, there is a 30 percent investment tax credit provision applicable to projects that began construction from 2017 through the end of 2025.[21] At the state level, New York's Clean Energy Standard requires 100 percent carbon-free electricity by 2040 and an Offshore Wind Standard under the Climate Leadership and Community Protection Act (CLCPA) 2019, which mandates about 9,000 MW by 2035. Additionally, while the ISO-New England (ISO-NE) is projecting the retirement of six GW of coal- and oil-fired generation, a state such as Massachusetts—which is within the ISONE power market area—is now requiring utilities to procure an aggregate of 2,800 megawatts from clean energy sources, which includes 1,600 megawatts of offshore wind energy.

[19] The PTC is a per kilowatt-hour (kWh) federal tax credit included under Section 45 of the U.S. Tax Code. 26 U.S. C. § 45. It is an inflation-adjusted per-kilowatt-hour (kWh) tax credit for electricity generated by qualified energy resources and sold by the taxpayer to an unrelated person during the taxable year. The duration of the credit is 10 years after the date the facility is placed in service for all facilities placed in service. Electricity from wind, closed-loop biomass, and geothermal resources receives as much as 2.5 cents/kWh. The PTC is phased down (40 percent) for wind facilities and expires for all renewable energy technologies commencing construction after December 31, 2021. §13101 of the recently enacted Inflation Reduction Act (IRA) of 2022 (Pub. L. No. 117-169, 136 Stat. 1818 (2022) extends the PTC incentives through 2024. It further provides for a base credit amount of 0.3 cents per kWh (0.5 cents per kWh in 2021, or 0.3 cents for half-credit technologies, after being adjusted for inflation). Facilities that pay prevailing wages during the construction phase and first 10 years of operation and meet registered apprenticeship requirements are eligible for a PTC that is five times the base amount, or 2.5 cents or 1.3 cents per kWh in 2021 after being adjusted for inflation. Qualifying marine and hydrokinetic renewable energy projects, which are half-credit technologies, would be allowed the full PTC. Additionally, a "bonus credit" amount would be provided for projects that meet domestic content requirements to certify that certain steel, iron, and manufactured products used in the facility were domestically produced.

[20] DSIRE*, Renewable Electricity Production Tax Credit (PTC)* (last updated Sept. 9, 2022), https://programs.dsireusa.org/system/program/detail/734. Renewable energy facilities placed in service after 2008 and commencing construction before 2018 (or 2020 for wind facilities) had the option of making an irrevocable election to claim the Investment Tax Credit (ITC) in lieu of the PTC although subject to a similar phase-down framework as the PTC.

[21] 26 U.S.C. § 48.

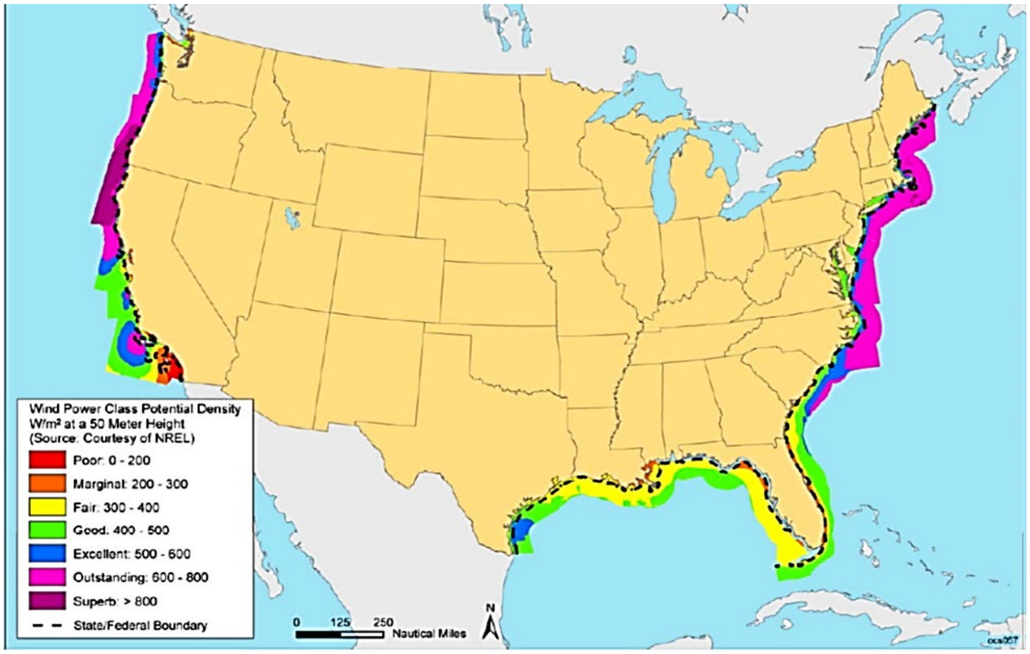

Figure 1: US Offshore Wind Energy Potential (as of 2007)[22]

In the Pacific (West) coast region, institutions in California and Oregon are also witnessing growing interests and activities regarding offshore wind development.[23] California's recently released West coast roadmap for offshore wind outlines a projection for major wind energy developments in the mid-to-long term. Considering the deep nature of the OCS in the Pacific region, offshore wind energy developments would mostly have to use floating turbine technology.

A. Technological Advancements and Innovations

A typical offshore wind project's viability depends on factors such as location, water depth, and wind speed available at a particular height reachable by the wind turbines. The modern turbine will start to generate electricity at the cut-in rate, i.e., when wind speeds get six to nine miles per hour (mph), while the turbines will shut down to prevent equipment damage if the wind is blowing too strong, roughly over 55 mph.[24] The offshore turbines are often larger than onshore turbines. Thus, they can generate more power due to the spinning size and diameter. As a result, location, wind speed, and the design of the turbines are essential to harnessing wind energy at the right scale. The same intriguing elements of offshore wind systems

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[22] BUREAU OF OCEAN ENERGY MGMT., *Guide to the OCS Alternative Energy Final Programmatic Environmental Impact Statement (EIS)* (Oct. 2007), www.boem.gov/Renewable-Energy-Program/Regulatory-Information/Alt_Energy_FPEIS_Chapter1.aspx.

[23] David Iaconangelo, *Calif. unveils largest U.S. offshore wind target,* ENERGYWIRE (May 10, 2022), www.eenews.net/articles/calif-unveils-largest-u-s-offshore-wind-target/; Michael Doyle, *Interior moves toward first wind lease sales off Calif. Coast*, ENERGYWIRE (May 26, 2022), https://www.eenews.net/articles/interior-moves-toward-first-wind-lease-sales-off-calif-coast/.

[24] *See* American Clean Power Assoc. (ACPA), *Wind Power Facts*, https://cleanpower.org/facts/wind-power/ (last visited Oct. 9, 2022).

also bring up issues regarding the potential impact on the environment, and the cost of energy supply to the grid to which a proposed project will be connected.

The range of technologies used for offshore wind turbine foundations varies depending on location and water depth features. They include: (a) the most common, mono-piles, comprising hollow steel poles up to 40m in height and used in shallow depths; (b) jacket foundations, which involve a four-sided lattice structure already common in offshore oil and gas applications; (c) gravity base foundations, which involve an enormous weight with a footprint wide enough to counteract local conditions—these are very sensitive to soil conditions at the surface and are less common; and (d) floating platforms which are typical in deep water applications. For water depths greater than 30m or at sites with softer soil compositions, a wider substructure base is needed to counteract overturning forces and to conform to turbine design requirements for stiffness. Deeper water means more structure is placed below the waterline and is a more difficult installation process logistically.

According to the American Clean Power Association (ACPA), over the course of a year, modern turbines can generate usable amounts of electricity over 90 percent of the time.[25] If the wind blowing at a turbine's location reaches the cut-in speed of six to nine mph, the turbine will start generating electricity. As wind speeds increase, so does electricity production.[26] In terms of reliability, it is reported that "wind energy only marginally increases total power system variability, as most changes in wind energy output are canceled out by opposite changes in electricity demand or other sources of supply." Wind changes tend to be gradual and predictable, making them far less costly to accommodate system-wide while they use less expensive, slower-acting reserves.[27]

In electricity parlance, a base load system is a power generating equipment normally operated to serve load (demand) around the clock. At the same time, the capacity factor refers to the ratio of electrical energy produced by a generating unit for the time period considered vis-à-vis the electrical energy that could have been generated if the system operates at its full designed capacity during the same period. Thus, when an electric generating facility can produce up to its nameplate capacity or maximum possible output regularly, 90 percent or 40 percent of the time within a specific period (e.g., one year), such a system can be said to have a 90 percent or 40 percent capacity factor. Modern wind farms often have capacity factors greater than 40 percent, which is close to some types of conventional coal or natural gas power plants. When wind turbines are spread over large areas, their output becomes far more constant and even easier to accommodate alongside other conventional baseload and intermediate load resources such as gas-fired and nuclear power plants.[28] The ACPA also points out that "modern wind plants can provide the same

[25] *Id.*
[26] *Id.*
[27] *Id.*
[28] Explaining how the various conventional technologies' role(s) vary due to daily and seasonal variations, the US Energy Information Administration (EIA), notes that ". . . [a]s demand varies over the day, different generators play different roles in meeting demand. Baseload capacity runs around the clock when it is not down for maintenance. Peaking capacity runs a few times a year

grid reliability services as conventional power plants, in many cases better than conventional plants, by using their sophisticated controls and power electronics."[29] However, it is essential to point out that wind energy turbines are still regarded as providing variable baseload service to the power mix supply of the energy grid.[30]

Technical challenges related to wind facilities include the need for structures and turbines to be designed to withstand and remain resilient in the marine environment. There is a potential for corrosion because of exposure to seawater, thus developers must be mindful of how such factors affect the operating and maintenance costs of the facilities. The DOE's Wind Energy Technologies Office forms partnerships with industry and national laboratories to produce innovative components, controls, and integrated system designs, as well as improved modeling and analysis tools which will improve the performance and reliability and reduce the costs of offshore wind systems.[31]

III. The Regulatory State on Leasing, Sitting, and Permitting

The federal government and coastal states play key roles in permitting offshore energy projects. Their responsibilities depend on whether the project is being sited within state or federal waters. Section 388 of the Energy Policy Act of 2005 (EPAct) amended the Outer Continental Shelf Lands Act (OCSLA) to address previous uncertainties regarding offshore wind projects. Hence, the Secretary of the DOI is granted the leading role in the development of wind energy projects offshore. The DOI's function regarding offshore energy development is administered via the BOEM. Note that the seaward jurisdiction of the U.S. over the oceans begins at the point on the coastline referred to as the baseline, and it extends at least 200 nautical miles out toward the sea.[32] Under the Submerged

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for short periods to help electricity systems meet peak demand. Daily demand for electricity is greater during the middle of the day than at night. Intermediate capacity runs during the day and is turned down or off at night. Seasonal demand for electricity is greater in the summer and winter than in the spring and fall. Some generators run as baseload capacity most of the year but cycle on and off like intermediate capacity during the spring and fall low-demand seasons. These generators could be identified as seasonal baseload capacity . . .." *See* U.S. EIA, Electric generators' roles vary due to daily and seasonal variation in demand (June 8, 2011), www.eia.gov/todayinenergy/detail.php?id=1710. While energy output from intermittent sources like wind and solar varies significantly and less predictably thus requiring energy storage investments, the high-capacity factor of offshore wind compared to other variable sources means it can also perform some 'baseload' services depending on the variabilities of factors such as wind speed and water depth location.

[29] ACPA, *supra* note 24.

[30] Offshore wind turbines are regarded as the only variable baseload power generation technology. *See Int'l Energy Agency*, *supra* note 8; Patrick de Mars et al., *Estimating the Impact of Variable Renewable Energy on Base-Load Cycling in the GB Power System*, 195 ENERGY 117041 (Mar. 2020).

[31] DOE Off. of Energy Efficiency & Renewable Energy, *Offshore Wind Research and Development*, https://www.energy.gov/eere/wind/offshore-wind-research-and-development (last visited Oct. 9, 2022).

[32] Maritime limits and boundaries for the United States are measured from the official U.S. baseline, recognized as the low-water line along the coast as marked on the National Oceanic and Atmospheric Administration (NOAA) nautical charts in accordance with the articles of the Law of

Lands Act of 1953 (SLA), coastal states such as California, Maine, or New York have title to the lands beneath coastal waters in an area stretching, in general, three geographical miles from the shore, subject to federal regulation for "commerce, navigation, national defense, and international affairs" and the power of the federal government to preempt state law.

BOEM can designate areas and issue leases for offshore wind farms on U.S.'s Exclusive Economic Zone (EEZ). Such powers are subject to internationally recognized rights on the EEZ and high seas and the jurisdiction granted to the coastal states under the SLA The U.S. littoral states have their respective coastal zone management plans (CZP) to coordinate the protection of habitats and resources in coastal waters under the Coastal Zone Management Act (CZMA). Any federal offshore wind project should therefore be consistent with such CZPs that are approved by the Secretary of Commerce. Offshore wind projects to be constructed within state waters, including any interconnection cables that would be necessary to transmit power back to shore, are subject to all state regulations or permitting requirements.[33]

On federal waters and the Outer Continental Shelf (OCS),[34] the DOI, in consultation with other federal agencies, is empowered to grant leases, easements, or rights-of-way for wind energy development. The BOEM activities carried out as a result of such a grant are done in a manner that provides for safety, protection of the environment, conservation of the natural resources within the OCS, and prevention of interference with reasonable uses of the EEZ, the high seas, and the territorial seas, such as navigation and fishing.[35] Under the National Environmental Policy Act (NEPA), the BOEM must evaluate potential projects' social and economic impacts.[36] This role implies that the BOEM requires accurate data and reliable information from relevant agencies involved in the permitting process and project developers. There is a constant need to make appropriate decisions and assessments of potential impacts and proffer necessary risk mitigation measures. The BOEM coordinates with relevant Federal agencies such as the U.S. Coast

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the Sea. The Office of Coast Survey depicts on its nautical charts the territorial sea (12 nautical miles), contiguous zone (24nm), and Exclusive Economic Zone (EEZ) (200nm, plus maritime boundaries with adjacent/opposite countries such as Russia off the coast of Alaska). *See* Nat'l Oceanic and Atmospheric Admin. Office of Coast Survey, *U.S. Maritime Zones*, https://nauticalcharts.noaa.gov/data/docs/gis-learnaboutmaritimezones1pager.pdf (last visited Oct. 9, 2022); *see also U.N. Convention on the Law of the Sea* https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf (last visited Oct. 9, 2022).

[33] CONG. RSCH. SERV., R40175, WIND ENERGY: OFFSHORE PERMITTING (2015) https://www.everycrsreport.com/files/20150113_R40175_4a86263083ea515ffd7e0b7ed69f1f23f9a1f590.pdf.

[34] The OCS is the 1.7 billion acres of Federal submerged lands, subsoil, and seabed beginning three nautical miles off the coastline—except for Texas, western Florida, and Puerto Rico, which claim a nine nautical mile belt— and extending to the edge of the Exclusive Economic Zone (EEZ), excluding any areas within the exterior boundaries of any unit of the National Park System, National Wildlife Refuge System, or National Marine Sanctuary System, or any National Monument.

[35] The Outer Cont'l Shelf Lands Act §8(p)(4), 43 U.S.C. § 1337.

[36] 42 U.S.C. § 4321 *et seq.*

Guard and the Fish and Wildlife Service (FWS) to be effective. Planning and coordination with these agencies are essential to avoiding conflicts among users and maximizing the OCS's economic and ecological benefits.[37]

Leases for offshore energy projects proceed under different processes depending on whether BOEM or the developer proposes an area for lease. Either way, BOEM must consult with state task forces, state and local representatives, and representatives of Indian tribes whose interests may be affected.[38] Before issuing a lease, BOEM follows a four-step process, issuing a Call for Information and Nominations, completing the Area Identification process, publishing a Proposed Sale Notice, and publishing a Final Sale Notice.[39] The commercial leasing process may be initiated by both solicited and unsolicited applications.[40] A solicited application is one in which BOEM identifies the potential development site and initiates the leasing process by publishing a notice of Request for Interest (RFI) or a Call for Information and Nominations in the Federal Register. An unsolicited application is one in which a potential developer applies for a site not otherwise considered by BOEM.

Upon receiving an unsolicited request, BOEM publishes an RFI to seek public comment and determine whether there is competitive interest from other developers, and then proceeds with the competitive process if there is such competitive interest. If not, it publishes a notice of Determination of No Competitive Interest and follows a separate procedure. The EPAct also provides a framework for collecting royalties, fees, and bonuses from a competitive process of granting such property rights. Development activities must be carried out to adequately address issues such as environmental impact, safety, protection of U.S. national security, and protection of the rights of others to use the OCS and its resources. This provision, in effect, calls for a process of stakeholder engagement and thorough environmental assessment, including the overarching NEPA reviews and assessments, security considerations, and navigational uses, which could also inadvertently slow down permitting processes if not properly coordinated and handled.

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[37] 30 C.F.R. § 585.102(a)(5).

[38] 30 C.F.R. §§ 585.102(e), 585.211(a)–(d), 585.231(e).

[39] *See* BOEM, *Regulatory Roadmap*, https://www.boem.gov/renewable-energy/regulatory-framework-and-guidelines#tabs-1443 (last visited Oct. 9, 2022). This map provides guidance on the requirements for acquiring an offshore wind commercial lease on the Outer Continental Shelf (OCS), pursuant to 30 C.F.R.§ 585.

[40] *See* 30 C.F.R. §§ 585.200–234.

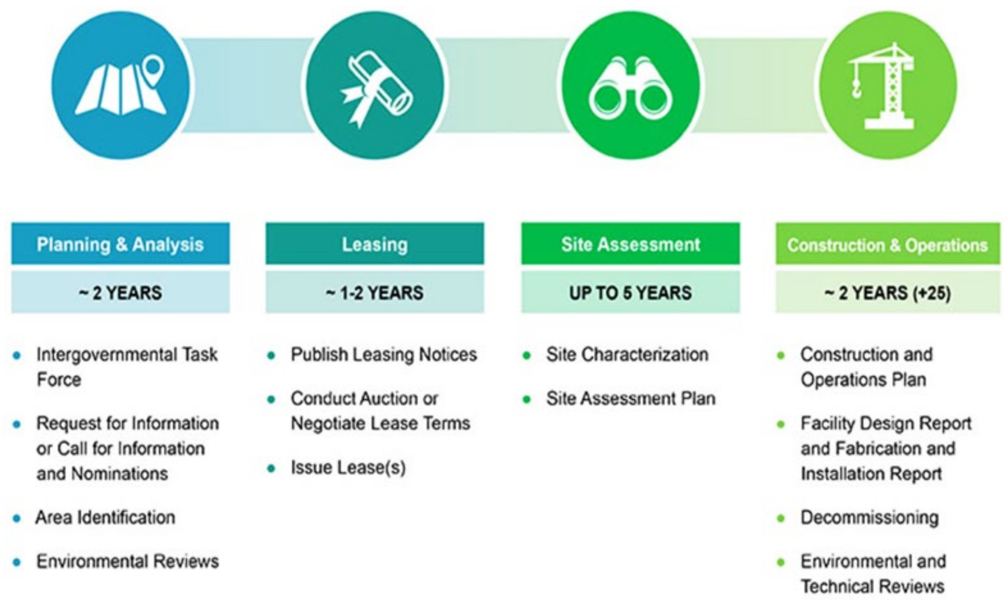

Figure 2: Regulatory Roadmap of offshore wind commercial lease on the US Outer Continental Shelf[41]

A. Facilitating Viable Offshore Wind Projects

Developing wind energy on federal waters starts with BOEM's planning and leasing of areas appropriate for offshore wind energy development. The planning process takes about two years, while the leasing process takes between one to two years. Following the grant of a lease, the next phase involves site assessment, in which the lessee submits the Site Assessment Plan (SAP) and Construction and Operations Plan (COP). The lessee typically has about five years to carry out assessments. The COP is the key document for highlighting the details of the facility's construction, operation, maintenance, and eventual decommissioning.[42] The SAP describes how the lessee will conduct resource assessment activities, such as installing meteorological towers or buoys, and technology testing during the site assessment phase of the commercial lease. It is important to note that the SAP must be approved before the lessee can install facilities or conduct its activities. This point is important to note because the mere grant of a lease in the earlier stage does not necessarily mean the BOEM has approved the lessee's planned activities and plans to manage potential impacts on the chosen site.

The COP, on the other hand, outlines how the lessee will construct and operate a commercial wind project following the grant of a commercial lease. The COP includes a description of all planned facilities, proposed construction activities,

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[41] *Overview of BOEM's Regulatory Framework*, BUREAU OF OCEAN ENERGY MGMT., https://www.boem.gov/renewable-energy/regulatory-framework-and-guidelines (last visited Oct. 9, 2022).

[42] BUREAU OF OCEAN ENERGY MGMT., *A Citizen's Guide to The Bureau of Ocean Energy Management's Renewable Energy Authorization Process* Dec. 2016, https://www.boem.gov/sites/default/files/renewable-energy-program/KW-CG-Broch.pdf.

commercial operations, and conceptual decommissioning plans. BOEM must approve the COP before the lessee can install facilities or conduct commercial activities described in the COP.[43]

The BOEM conducts its own environmental and technical reviews and solicits public comment before ultimately deciding whether to approve (with conditions) or disapprove the COP. Upon approval, the lessee typically receives a 25-year commercial lease, which may come with the possibility of renewal. Developing and transmitting the energy generated to the shore onwards to designated consumer(s) (with a PPA or the wholesale power market or transmission grid) means that the lease terms will typically include one or more easements to install cables, pipelines, and other appurtenances on the OCS Recently approved projects include (a) the construction and operation of the 800 MW Vineyard Wind project located 12 nautical miles off the coast of Martha's Vineyard, Massachusetts, which was approved in May 2021; and (b) the first federal marine hydrokinetic energy (MHK) research lease, granted for the PacWave South project, to be located about six nautical miles off Newport, Oregon. BOEM granted this lease in coordination with other agencies such as FERC in January 2021 about eight years after the initial request was submitted.

Given the highlighted steps, offshore wind developers could expect to spend at least seven to ten years in the planning and construction phases before commercial operations and the actual delivery of electrons from the installed offshore wind facilities can commence. The Cape Wind project took almost 15 years. Still, the developers ended up canceling the project after years of litigation and dealing with hurdles within the framework of the regulatory state.[44]

B. Permitting Hurdles for Offshore Wind

While larger blades and wider spinning diameters are good for economizing costs and generating energy capacity per turbine, the likelihood of having these massive structures spread over designated areas within the OCS., on the other hand, presupposes potential negative impacts worth considering before permits and approvals are granted.[45] Note that the regions within the OCS would be equally subject to other simultaneous uses such as fishing, navigation, migration and habitats of endangered species, movements of migratory birds, etc. In *Public*

[43] *Id.* at 4.

[44] *See, e.g.,* Pub. Emp. for Env't Resp. v. Beaudreau, 25 F. Supp.3d 67 (D.D.C. 2014).

[45] *See* The Endangered Species Act (ESA), which aims at conserving endangered and threatened species and their habitats. 16 U.S.C. § 1531. Section Seven of the ESA mandates that BOEM and all other Federal Agencies consult with the Secretary of Commerce and/or Interior to ensure that any "agency action" is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of an endangered or threatened species' critical habitat. Formal consultation must occur for any activity that BOEM, NMFS, or USFWS determines may adversely affect listed species or designated critical habitat. *See also* 16 U.S.C. §§ 703–12, which "implements four international conservation treaties that the U.S. entered into" and is "intended to ensure the sustainability of populations of all protected migratory bird species." U.S. Fish & Wildlife Serv., *Migratory Bird Treaty Act of 1989*, https://www.fws.gov/law/migratory-bird-treaty-act-1918.

Employees for Environmental Responsibility v. Beaudreau,[46] a group of individuals and environmentalists brought interrelated claims which were consolidated and concerned several administrative decisions made by federal agencies approving the construction of various aspects of the Cape Wind project in Nantucket Sound, offshore Massachusetts. The Plaintiffs claimed that the agencies—including the Secretary of Interior, the BOEM, the United States Army Corps of Engineers (USACE), and U.S. Coast Guards—violated various provisions in the Administrative Procedure Act (APA), the Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), the OCSLA, and NEPA. The District Court opined, among other things, that the Coast Guard did not engage in arbitrary and capricious decision-making when it issued a safety assessment letter that was relied upon by the BOEM. Likewise, the BOEM's reliance on the safety assessment letter in determining that the project was carried out in a manner providing for the protection of the environment and prevention of waste was appropriate. The court also found that the BOEM's incorporation of the Coast Guard's navigational safety findings into its final Environmental Impact Statement (EIS) was not a consummation of the Coast Guard's decision-making process, nor did it determine the rights or obligations of any party or result in legal consequences; rather, those findings were meant to inform BOEM of the project's impact on navigational safety in and around the project. Thus, it can be argued that the regulatory state is not set up to 'kill' or stall projects unreasonably. Rather agencies in the regulatory state have the task of implementing law and policy by ensuring they are duly informed before making decisions affecting competing interests, and by acting in a manner that is not arbitrary or capricious during the process of permitting or approving projects.

Under the APA's arbitrary and capricious standard of review, the court's role is not to second guess the agency, but rather to ascertain whether the administrative record demonstrates that the agency has considered the relevant data and articulated a satisfactory explanation for its action, and whether the agency's choice reflects a rational connection between the facts found and the choice made. It is also worth noting that the District Court in *Beaudreau* opined that the BOEM did not violate OCSLA. However, it departed from its regulations and approved the COP for the project in Nantucket Sound so that the contractor could obtain financing to conduct additional surveys. The court agreeably noted that conducting those surveys after approval was consistent with the requirement that projects be carried out in a manner that duly provides for the safety and protection of the environment. Thus, it was appropriate for BOEM to allow the collection of data after approving COP, perhaps because this was the first project of its kind in the U.S. OCS, and the data had to be collected and analyzed before commencing construction or otherwise disturbing the seafloor.[47] Cape Wind submitted a COP revision in 2014, which the

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[46] *Beaudreau,* 25 F. Supp.3d 67.

[47] The notable Cape Wind Project history and milestones are as follows: between 2001 and 2004, project developers (CWA) submitted an application to the Army Corps of Engineers, which assumed the lead federal regulatory role under the River and Harbors Act and issued a permit for Cape Wind to construct a meteorological tower to measure wind speeds and gather meteorological data. The Army Corps issued a draft Environmental Impact Statement (EIS) for the construction of

BOEM approved. Despite the findings and steps taken to push ahead with the project, some interest groups and stakeholders had unresolved issues and opposition. Thus, the developers and utilities National Grid and NStar terminated their PPAs tied to the project in 2015, effectively killing the project.

After considering every significant aspect of the environmental impact of the proposed action under NEPA, an agency must inform the public that it has indeed considered environmental concerns in its decision-making process. In *Public Employees for Environmental Responsibility v. Hopper*, a case about the same Cape Wind disputes and controversies, the U.S. Court of Appeals District of Columbia Circuit opined that the BOEM's EIS failed to take NEPA's required "hard look" at the geological and geophysical environment impacted by the project and thus vacated the EIS. Further, it was held that the BOEM's grant of a regulatory departure, permitting the developer to depart from the requirement to submit geological surveys with its construction plans, did not violate OCSLA as stated earlier. The Coast Guard's terms and conditions were imposed to ensure navigational safety was upheld to comply with the Maritime Transportation Act requirements. The decision of the USFWS to disregard the environmental conservation organizations' submissions about the feasibility of mitigation measures to prevent killing endangered and threatened migratory bird species by the project was held to be arbitrary and capricious in violation of ESA. Thus, the court would vacate USFWS's incidental take statement that that project would not jeopardize the continued existence of any threatened or endangered species.

In *Fisheries Survival Fund v. Jewell*,[48] the Plaintiffs, including the Fisheries Survival Fund, brought an action at the District Court in D.C., claiming that the BOEM violated NEPA, the OCSLA, and the APA for issuing a lease to the Defendant-Intervenor Statoil (now known as "Equinor") for the development of an offshore wind project off the coast of New York. In denying Plaintiff's motion(s) for preliminary injunction, etc., the court reiterated that the "…OCSLA authorizes BOEM to issue leases, easements, or rights-of-way for offshore renewable energy projects."[49] In exercising this authority, BOEM is required to consult with the U.S. Coast Guard and other relevant federal agencies and must consider several factors

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a wind power facility. The Energy Policy Act of 2005 gave the lead Federal regulatory authority to the Department of the Interior. The former Minerals Management Service (MMS) took the lead role, and CWA, later on, applied for a commercial lease from the BOEM in 2005. A draft EIS was published on January 18, 2008, and the final EIS was published on January 21, 2009. The analysis determined that impacts are expected to be mostly negligible to minor. Overall, the project is not expected to have a negative impact on the biological, physical, or human environments, although there will be adverse effects to historic and cultural properties. The Nantucket Sound was later named as eligible for listing as a traditional cultural property and an historic and archaeological property. Consequently, the BOEM issued a revised Documentation of Section 106 Finding of Adverse Effect in 2010. Nevertheless, the DOI approved the project and CWA signed the first commercial offshore renewable energy lease in the US in 2010. The COP was later approved with conditions while the Avian and Bat Monitoring Plan (ABMP) was also approved by the BOEM after receiving concurrence from the U.S Fish and Wildlife Service, on November 20, 2012.

[48] Fisheries Survival Fund v. Jewell, No. 16-CV-2409 (TSC), 2018 WL 4705795, (D.D.C. Sept. 30, 2018), *aff'd sub nom.* Fisheries Survival Fund v. Haaland, 858 F. App'x 371 (D.C. Cir. 2021), *aff'd sub nom*, Fisheries Survival Fund v. Haaland, 858 F. App'x 371 (D.C. Cir. 2021).

[49] 43 U.S.C. § 1337(p)(1)(C).

that include, among other things, safety, protection of the environment, prevention of waste, conservation of natural resources, national security interests, and—critically—"'the location of . . . a lease . . . for an area of the outer Continental Shelf' and 'any other use of the sea or seabed, including use for a fishery, a sea lane, a potential site of a deepwater port, or navigation. . . .'"[50] In addition, the district court noted that BOEM follows a thorough four step process before issuing a lease. Once the lease is issued, the lessee must submit an SAP for review before any assessment activity occurs. Even after completing a site assessment, a lessee may not begin construction until it has been submitted and BOEM has approved a COP. In the assessment process, the BOEM analyzes the potential environmental impacts of the plans. Consequently, the lease is issued following a revised E.A., which found no significant impact on commercial wind lease issuance and related activities within the designated area.[51]

Generally, the BOEM's framework for permitting offshore wind is set up to address the issue of mitigating environmental impacts early in the planning process by conducting site identification through public stakeholder meetings.[52] In this regard, it is important to identify and assess areas that may have significant implications for the environment, including marine mammals. If the lessee eventually goes ahead to submit a COP for approval to commence construction, then the BOEM would conduct a separate site and project-specific NEPA analysis, and likely an EIS, and would provide additional opportunities for public involvement in the process. Thus, the issuance of an offshore wind lease is not a final determination of rights and interests, nor does it amount to closure in obtaining and incorporating the concerns of other stakeholders that the project may impact. Given the necessity of conducting multiple assessments of the same knotty issues that may lead to more protracted controversies amongst various stakeholders during the lengthy project approval process, it may be helpful to consider the opportunities to introduce some standardization and process streamlining and ask the question: at what stage of the process is best to have a full EIS? The idea of incorporating early or Regional Programmatic Environmental Impact Statements (PEIS) highlighted further in Part V below has been under consideration for several years.[53]

In *Fisheries Survival Fund v. Haaland*,[54] the D.C. Circuit Court of Appeals heard an appeal to the decision in *Fisheries Survival Fund v. Jewell* discussed above and affirmed the ruling of the district court. Consequently, it was held that the

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[50] Fisheries Survival Fund, 858 F. App'x at *3.

[51] *Id*. at *10; *see also* 81 Fed. Reg. 75, 438 (Oct. 31, 2016) ("The finding of no significant impact concluded that "the reasonably foreseeable environmental impacts . . . would not significantly impact the quality of the human environment," and "therefore, the preparation of an environmental impact statement [was] not required.").

[52] Following an initial Call for Information and Nominations stage, project developers and other stakeholders—such as state and tribal governments, natural resource agencies, and other ocean users—may provide comments that may help the BOEM determine the most wind energy areas that appear "most suitable" for leasing considering the concerns and issues raised by such stakeholders. See Comay & Clark, *supra* note 6, at 6.

[53] Bureau of Ocean Energy Mgmt., supra note 22.

[54] Fisheries Survival Fund, 858 F. App'x 371 (D.C. Cir. 2021).

BOEM does not need to conduct full NEPA environmental reviews when granting an offshore wind energy lease. The appellants comprised organizations of fishermen and seaside municipalities who challenged BOEM's decision to issue the lease. The D.C. Circuit held that "[A]n agency's NEPA obligations mature only once it reaches a critical stage of a decision which will result in irreversible and irretrievable commitments of resources to an action that will affect the environment."[55] Generally, the issuance of an energy lease triggers NEPA unless the lease reserves the authority to "(i) preclude all activities pending submission of site-specific proposals and (ii) prevent proposed activities if the environmental consequences are unacceptable."[56]

The grant of the lease to Equinor in the *Fisheries Survival Fund* case was held to satisfy both requirements for two main reasons. First, the lease does not, by itself, authorize any activity within the leased area. Instead, it grants Equinor (i.e., the lessee) the exclusive right and privilege to (a) submit a SAP and COP for the project identified in the lease covering the designated area, and (b) conduct activities to be detailed in the SAP and COP that will be submitted for approval to the BOEM. Second, and as rightly opined, it is still up to the BOEM to approve the SAP or COP in following the applicable regulations in 30 C.F.R. Part 585.[57] Thus, BOEM could eventually disapprove the SAP or COP to the extent that its proposed project development activities are unacceptable from an environmental perspective or if such activities conflict with one or more of the requirements outlined in the OCSLA or applicable regulations.[58]

From a legal standpoint, the cases mentioned above exemplify the various stages of approving an offshore wind energy project and the role of the regulatory state in implementing government policy and applying laid-down rules of law while addressing environmental concerns and conflicting interests. While such concerns are legitimate, there are thoughtful and efficient avenues for regulators and developers to address them that avoid unnecessary delays to project timelines.[59] BOEM solicits public comments, convenes Intergovernmental Renewable Energy Task Forces (Task Forces) with interested states, and holds public meetings throughout the offshore wind development. There are also various avenues for public engagement and stakeholder comments during the Environmental Assessment and NEPA review processes. In particular, the *Fisheries Survival Fund* decision expounds on the issue of whether a mere lease sale may trigger extensive environmental review under NEPA—potentially streamlining the initial lease acquisition process—which also requires the investment of significant funds before

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[55] *Id.* at 372.

[56] Sierra Club v. Peterson, 717 F.2d 1409, 1415 (D.C. Cir. 1983).

[57] See Comay & Clark, *supra* note 6, at 6 – 8.

[58] *Id.* The lease reserves both the authority to preclude all activities pending submission of site-specific proposals (i.e., a SAP or COP) and the authority to prevent proposed activities by rejecting the SAP or COP if the environmental consequences are unacceptable. Accordingly, the lease did not trigger the Bureau's NEPA obligations.

[59] American Clean Power Assoc. and the Univ. of Delaware's Special Initiative on Offshore Wind, *Offshore Wind Public Participation Guide* (Jan. 2020), https://cleanpower.org/wp-content/uploads/2021/02/Final_ACP-Engagement-Process-1.pdf.

developers have cleared the environmental review process.[60] Some of the issues discussed above came up recently in the case of *Allco Renewable Energy Ltd. v. Haaland,*[61] in which a solar farm developer is seeking an order vacating the federal regulatory approvals granted to the Vineyard Wind Project. The claimant argues that the authorizations violate federal environmental laws and threaten solar energy producers' economic interests. The case was however dismissed on June 30, 2022, without prejudice to the solar developer's claims because the developer had not provided the requisite notice prior to filing the claims.

Over the past decade, there have been several decisions regarding the role of regulatory agencies in assessing and permitting onshore wind projects, perhaps because there have been more onshore than offshore projects. In *Protect Our Communities Foundation v. Jewell*,[62] some interested organizations brought an action against the DOI's Bureau of Land Management (BLM) and various officials of the DOI alleging that the proposed onshore wind energy project, for which BLM granted right-of-way on federal lands, would harm birds in violation of the MBTA and the Bald and Golden Eagle Protection Act (BGPA), and challenging the adequacy of the BLM's EIS for the project under the NEPA. Following an appeal against the judgment of the District Court, it was held that: (a) the NEPA EIS's statement of purpose and need was adequately broad and adequately examined viable alternatives; (b) mitigation measures outlined in the EIS were sufficiently detailed; (c) the EIS took requisite "hard look" at the impact of the project; (d) BLM was not liable under the MBTA and the BGPA. The court opined that an agency acts in an "arbitrary and capricious" manner under the APA when it relies on factors that Congress has not intended it to consider, entirely fails to consider an important aspect of the problem, explains its decision that runs counter to the evidence before the agency, or is so implausible that it cannot be ascribed to a difference in view or the product of agency expertise.[63] NEPA outlines a series of procedural steps, but it does not impose any specific substantive result on an agency; rather, compliance with NEPA involves the application of a rule of reason, which involves a pragmatic judgment whether the EIS's form, content and preparation enhances both informed decision-making and informed public participation.[64]

[60] Timothy Hobbs et al., *D.C. Circuit Affirms that Offshore Wind Lease Does Not Trigger NEPA Review,* NAT'L LAW REVIEW (June 3, 2021) https://www.natlawreview.com/article/dc-circuit-affirms-offshore-wind-lease-does-not-trigger-nepa-review.

[61] Allco Renewable Energy Ltd. v. Haaland, No. 1:21-cv-11171-IT, 2022 U.S. Dist. LEXIS 115687, at *2 (D. Mass. June 30, 2022). See. The Sabin Center for Climate Change Law's U.S. Litigation Chart at http://climatecasechart.com/case/allco-renewable-energy-ltd-v-haaland/ (last visited Oct. 21, 2022) for future updates on this case.

[62] Protect Our Communities Found. v. Jewell, 825 F.3d 571 (9th Cir. 2016).

[63] *Id.*

[64] National Environmental Policy Act of 1969, 42 U.S.C. § 4332. NEPA favors coherent and comprehensive up-front environmental analysis to ensure that the agency will not act on incomplete information, only to regret its decision after it is too late to correct. 42 U.S.C. § 4332(2)(C).

C. Recent Offshore Projects and Recurring Issues

Despite the controversies and hurdles that eventually led to the mothballing of the Cape Wind Project, some recent developments and projects continue to emerge, especially on the east coast of the OCS. In 2017 and 2018, Massachusetts utilities and the Massachusetts Department of Energy Resources (DOER) conducted a solicitation process for long-term contracts for up to 800 MW of offshore wind proposals, which led to the selection of the Vineyard Wind project.[65] Vineyard Wind executed PPAs with the three Massachusetts utilities. The PPAs were approved on April 16, 2019 by the Massachusetts Department of Public Utilities (DPU) and formed a critical piece in the commercial and regulatory framework of delivering electrons from the turbines. Signaling growing interests in the east coast area, the DOI conducted a lease sale for 390,000 acres offshore in Massachusetts in December 2018. Separately, Massachusetts is also working with Rhode Island to develop a 1,200 MW offshore wind capacity for the region. Massachusetts' contribution is the 800-MW Vineyard Wind project. Rhode Island's project is Deepwater Wind's 400-MW Revolution Wind. The first commercial-scale offshore wind project in the U.S., the 30 MW Block Island Wind Farm, is located in the waters of Rhode Island and was commissioned in 2016 after several years of planning and regulatory hurdles. Although the wind farm is within state waters, the transmission line from the turbines to the shore crosses BOEM's Outer Continental Shelf (OCS) lands and therefore requires federal approval of a right-of-way (ROW) grant.

Maryland's Offshore Wind Energy Act of 2013 aims to incentivize project development by making provisions for Offshore Wind Renewable Energy Credits (ORECs). Like New York, New Jersey aims to deploy 3,500 MW of offshore wind energy projects by 2030. In June 2019, Ocean Wind was selected as New Jersey's initial offshore wind project. Significant developments and proposals are being considered in other states such as New York, Virginia, and Connecticut.[66] Some of the most pressing issues and objections to these projects include the potential impact on the interests of the coastal and fishing communities, especially the loss of revenue to commercial fishermen due to perceived risks of significant interruptions. They are also concerned that residential customers served by interconnected markets may eventually have to pay much higher prices for electricity than they do now.[67]

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[65] The BOEM approved Vineyard Wind's environmental permit in May 2021, thus becoming the first offshore wind developer to complete BOEM's environmental review process. There are 14 other developers with active leases along the Eastern Seaboard trying to receive permits. Heather Richards, *Vineyard Wind gets major victory but faces new troubles*, ENERGYWIRE (May 12, 2021), https://www.eenews.net/articles/vineyard-wind-gets-major-victory-but-faces-new-troubles/.

[66] *Id.*

[67] Ørsted said the first New Jersey project would raise the average residential customer's bill by $1.46 a month. The state says its second project would add another $1.28 to residential bills. Atlantic Shores Offshore Wind's project would add $2.21 a month to residential bills. Wayne Parry, *They're Not blown away by N.J.'s offshore wind power plans,* ASSOC. PRESS (July 17, 2021), https://whyy.org/articles/theyre-not-blown-away-by-n-j-s-offshore-wind-power-plans/.

On the issue of whether offshore wind turbines can co-exist with commercial fishing and marine species, the ACPA opines that there are limited impacts to marine ecosystems or seafood supply from offshore wind. Although offshore wind lease areas encompass hundreds of square kilometers, wind turbine structures occupy only a small portion of that area.[68] With turbine spacing and layouts coordinated with the BOEM and the U.S. Coast Guard, leasing areas can continue to be used for many of the same purposes for which they were originally used, such as commercial and recreational fishing, recreational boating, and tourism-related trips.[69] On the question of whether vessels will be able to transit through wind farms, the ACPA notes that neither BOEM nor the Coast Guard will prohibit vessels, including commercial fishing vessels, from transiting through (or fishing within) lease areas.[70]

As a part of the BOEM permitting process, developers have to submit a navigation safety risk assessment (NSRA) as a part of their COP. The Coast Guard and BOEM carefully review these to ensure compatibility with safe navigation.

D. Planning Interconnections with Wholesale Markets and Grid

As mentioned above, states like New York and California, along with the current Federal Government administration, have established significant wind energy capacity and policy targets.[71] Developing the projects is not only about the timeliness of completion or effectively assessing and mitigating impacts on the environment and conflicting uses; rather, it is equally important to ensure such large amounts of additional electricity capacity can be safely and reliably transmitted in real-time. In other words, a project developer would ordinarily need to factor in onshore physical interconnection and transmission infrastructure and technical planning with relevant Regional Transmission Operators (RTOs) and Independent System Operators (ISOs).[72] The NYISO, for instance, is already a very loaded transmission network with physical interconnections to the NE-ISO network. Grid operators also often have congestion and network balancing considerations.

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[68] ACPA, *supra* note 24.

[69] *Id.*

[70] *Id.*

[71] U.S. DEP'T OF ENERGY, Offshore Wind Market Report: 2022 Edition, (Doe/Go-102022-5765, Aug. 2022) vi, 34, https://www.energy.gov/sites/default/files/2022-09/offshore-wind-market-report-2022-v2.pdf. States policies aim to procure at least 39,322 MW of offshore wind energy capacity by 2040. The U.S. offshore wind energy market is largely driven by state-level offshore wind energy procurement activities and policies. See also, ACPA, *Offshore wind power facts*, *https://cleanpower.org/facts/offshore-wind/* (last visited May 15, 2022).

[72] U.S. DEP'T OF ENERGY, Offshore Wind Market Report: 2022 Edition, *supra* note 71, at 30, 47 reports that the New York's ISO can integrate nine GW of offshore wind energy if it expands Long Island bulk transmission and upgrades transmission in New York City, while the ISO-New England could support the integration of about 5.8 GW of offshore wind energy if it makes minimal onshore transmission upgrades, but capacities beyond 5.8 GW will require substantial upgrades. The California's Public Utilities Commission recently directed the California ISO to analyze the transmission requirements for an 8,000-MW and 21,000-MW offshore wind scenario.

The interconnections and entry of energy from offshore wind projects into the networks of the wholesale power markets would be subject to Federal Energy Regulatory Commission (FERC) jurisdiction.[73] Acting under the regulatory jurisdiction of the FERC, the RTOs and ISOs manage the various wholesale power transmission networks.[74] RTOs/ISOs are also responsible for planning the expansion and enhancement of the transmission system, including increases due to planned capacity addition from future offshore wind systems. Through procedures established under the Open Access Transmission Tariff (OATT), the RTOs/ISOs identify the necessary upgrades required to accommodate the interconnection of the new generation to the transmission system. Reliability, economic, and public policy issues are significant in the planning and interconnection process. As new offshore projects are being reviewed and planned, due consideration must be given to necessary investments in interconnection and transmission networks.[75]

Local and state-level utility commissions also need to be aware of such plans and future investment needs in the medium to long term. For instance, following the recent decision of the Virginia State Corporation Commission to require a performance guarantee from Dominion Energy pertaining to its planned 2.6 GW offshore wind farm, the energy utility recently announced that such a requirement will make the project commercially untenable.[76] According to Dominion, the performance guarantee requirement means that its retail customers must be held harmless by the utility for any shortfall in energy production below the project's expected 42 percent average annual capacity factor, measured on a three-year rolling average.[77] Thus, apart from the FERC's role at the wholesale market level, state utility commissions responsible for managing and regulating power distribution systems and retail on behalf of local end-users would also need to take cognizance of the changing power generation and supply dynamics.

FERC Order No. 2003 provides for standardization of generator interconnection agreements and procedures applicable to facilities with a capacity of 20 MW or more.[78] FERC Order No. 2006 provides pro forma interconnection procedures and a standard interconnection agreement for facilities with a generating capacity of 20 MW or less.[79] The interconnection costs, controversies, and timing are essential to project goals and system planning. Regardless of political dispositions or policy-level support and interests, institutions such as FERC and the

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[73] U.S. DEP'T OF ENERGY, UNITED STATES ELECTRICITY INDUSTRY PRIMER 25 (July 2015), https://www.energy.gov/sites/default/files/2015/12/f28/united-states-electricity-industry-primer.pdf.

[74] *Id.*

[75] *Id.*

[76] *See* Ethan Howland, *Dominion threatens to abandon 2.6-GW offshore wind farm over performance guarantee*, UTILITY DIVE (Aug. 25, 2022), https://www.utilitydive.com/news/dominion-offshore-wind-performance-standard/630397/.

[77] *Id.*

[78] Standardization of Generator Interconnection Agreements and Procedures, Order No. 2003, 104 FERC ¶ 61,103 (2003) (codified at 18 C.F.R. §. 35).

[79] Standardization of Small Generator Interconnection Agreements and Procedures, Order No. 2006 (2005) (codified at 18 C.F.R. § 35).

relevant grid and network operator—for example, CAISO in California, NYISO for New York, or PJM for Virginia—will have to be involved in the actual delivery of the clean wind electrons.

In 2021, New York's Public Service Commission (PSC) declared that offshore wind goals are driving additional investments in transmission facilities to deliver that renewable power to Long Island and from Long Island to the rest of New York State.[80] The NYISO noted:

> Offshore wind presents transmission challenges for New York; specifically, how to reliably integrate all that power from up to 30 miles out in the Atlantic Ocean onto the statewide grid? As offshore wind projects continue to be developed, we expect project owners to build supply lines underwater to several spots in New York City and Long Island, close to the shore, where major transmission lines and substations exist. Our role will be studying the interconnection of those underwater cables to existing transmission infrastructure on land and planning the future grid to operate with additional energy from those new resources.[81]

It is noted that these transmission interconnection projects are not the subject of the PSC's declared transmission investment need. Rather, the PSC is focused on expanding the system's capability to move power (including all the energy from new offshore resources) onto Long Island and to the rest of the state.

E. Addressing Tradeoffs in the Emerging Wind Energy Sector

While the *ex-ante* costs and impacts may be fairly substantial, the promise of *ex post* utility-scale clean energy to be supplied to the respective markets in the medium to long-term is perhaps a considerable trade-off . Assuming that all stakeholders in the emerging market are primarily motivated by their self-interests when making claims or seeking to oppose or support the approval and completion of a project(s), it would be necessary for the regulatory state to actively identify and address misperception of risks, unwarranted aversion to risk and losses, and incomplete information issues that may lead to counterproductive policy outcomes. For instance, in the *Allco Case,* a solar energy company is claiming that the development of a Wind Project such as Vineyard will affect the economics of its solar ventures.[82] In the *Beaudreau Case,* the need to obtain financing and fill an informational gap meant that the lessees were permitted to conduct further

[80] *Offshore Wind and the Role of New Transmission,* N.Y. INDEP. SYS. OPERATOR (June 17, 2021), https://www.nyiso.com/-/offshore-wind-and-the-role-of-new-transmission.
[81] *Id.*
[82] For the latest developments in this case, *see* The Sabin Center for Climate Change Law's U.S. Litigation Chart at http://climatecasechart.com/case/allco-renewable-energy-ltd-v-haaland/ (last visited Oct 21, 2022).

geophysical surveys to gain more information and knowledge about the project site after the COP was approved.[83]

Regulatory institutions and agencies of the state are often set up to reflect prevailing legal wisdom about fair and effective processes and when industrial developments require effective and pragmatic oversight.[84] Rushing through permitting processes could have harmful impacts on legitimate rights and interests. At the same time, failure to complete projects at the right time and scale also has significant implications for the commercial interests of developers and energy policy goals of supplying reliable and cleaner energy to the grid in the mid-to long-term. As pointed out earlier, relevant institutions within the regulatory state have a role in ensuring a more informed decision-making framework and robust assessment of issues raised by the stakeholders vis-à-vis project developers. Gathering complete information and thorough engagement with the policy options relating to energy systems would foster rationality, reduce bias, and create more effective decision-making processes for approvals and development of the clean and reliable energy market that policymakers and stakeholders seek. For example, understanding that the capacity factor of offshore wind is generally higher than other variable resources like onshore wind and solar PV and could serve as a variable baseload resource to the future net-zero energy supply mix.

IV. Reconciling Differences and Conflicting Interests

The BOEM is "responsible for managing the development of the nation's offshore resources"—including both oil and gas, as well as renewable resources—"in an environmentally and economically responsible way."[85] The Secretary delegated authority to BOEM to regulate activities that produce or support the production, transportation, or transmission of energy sources, including resource evaluation, planning, leasing, environmental science, and environmental analysis.[86] The BOEM's authority over renewable energy developments in the OCS hinges on the provisions of OCSLA as amended by the EPAct.[87] To facilitate this interagency coordination and stakeholder engagement efforts, the BOEM establishes Intergovernmental Renewable Energy Task Forces (Task Forces).[88] These Task Forces are based in states and regions where the Governor(s) have initially contacted BOEM with an expressed interest in developing offshore renewable

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[83] Pub. Emps. for Env't. Resp. v. Beaudreau, 25 F. Supp. 3d 67 (D.D.C. 2014).

[84] Cohen, supra note 3, at 370.

[85] See subsection eight of the Outer Continental Shelf Lands Act (OCS Lands Act) (43 U.S.C. § 1337), as set forth in section 388(a) of the Energy Policy Act of 2005 (EPAct) (Pub. L. 109-58) and amended by the Reorganization of Title 30: Bureaus of Safety and Environmental Enforcement and Ocean Energy Mgmt., 76 Fed. Reg. 64431 (Oct. 18, 2011) (codified at 30 C.F.R. § 585.100).

[86] *Id.*

[87] *Id.*

[88] BUREAU OF OCEAN ENERGY MGMT., *supra* note 42, at 15.

energy projects.[89] Notably, the Task Force plays a crucial role during the planning and analysis phase by facilitating intergovernmental communications, gathering preliminary data, researching specific issues, and providing BOEM feedback from stakeholder groups. The Task Force also helps to ensure that the information needs, multiple-use concerns, and associated solutions are identified early in the leasing process.

Currently, there are thirteen state Task Forces— Maine, Rhode Island, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Florida, Oregon, Hawaii, and California—and three regional/multi-state Task Forces—Gulf of Maine, Gulf of Mexico, and New York Bight.[90] The composition of a typical Task Force would generally include local governmental entities such as county board members and city council members; tribal entities; state entities such as legislative commissions, state agencies, the Governor's office, and the State Historic Preservation Office; and federal entities such as the National Park Service, Bonneville Power Administration, Bureau of Indian Affairs, Department of Defense, NOAA, U.S. Coast Guard, DOE, DOI, and the U.S. Geological Survey.[91] Thus, one could conclude that the Task Force's composition is designed to ensure a wide range of representation from relevant stakeholders. Such a broad representation creates a forum for providing insights on relevant issues such as equity and inclusion, ecological impacts, energy, national defense, trade and commerce, and other issues.

The BOEM generally recognizes the unique legal relationship of the United States with tribal governments. In states with indigenous groups and where such communities have coastal interests, an essential part of the Task Force will involve engaging with tribal entities.[92] Tribal and Alaska Native Claims Settlement Act (ANCSA) Corporation consultations are typically required for actions with tribal implications. Such actions are defined as "[a]ny Departmental regulation, rulemaking, policy, guidance, legislative proposal, grant funding formula changes,

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[89] Energy and Policy Act of 2005, 43 U.S.C. § 1337(p)(7) ("The Secretary shall provide for coordination and consultation with the Governor of any State or the executive of any local government that may be affected by a lease, easement, or right-of-way under this subsection.").

[90] Bureau of Ocean Energy Mgmt., *State Activities*, https://www.boem.gov/renewable-energy/state-activities (last visited Oct. 12, 2021).

[91] BUREAU OF OCEAN ENERGY MGMT., *supra* note 42, at 15. For a more extensive list, *see* BUREAU OF OCEAN ENERGY MGMT., BOEM OREGON INTERGOVERNMENTAL RENEWABLE ENERGY TASK FORCE (May 2020), https://www.boem.gov/renewable-energy/state-activities/boem-oregon-intergovernmental-renewable-energy-task-force; BUREAU OF OCEAN ENERGY MGMT., GULF OF MAIN INTERGOVERNMENTAL RENEWABLE ENERGY TASK FORCE ROSTER (May 2020), https://www.boem.gov/sites/default/. files/documents/ renewable-energy/stateactivities/Gulf%20of%20Maine% 20Task%20Force%20Roster.pdf

[92] Memorandum from William Brown, Chief Exec. Officer, BOEM, on BOEM Tribal Consultation Guidance § 3 (June 29, 2018) https://www.boem.gov/sites/default/files/about-boem/Public-Engagement/Tribal-Communities/BOEM-Tribal-Consultation-Guidance-with-Memo.pdf.

or operational activity that may have substantial direct effect on an [Indian Tribe or ANCSA corporation]."[93]

A. The Task Force and BOEM

As pointed out earlier, the four distinct phases of BOEM project authorization are (1) planning and analysis, (2) issuance of a lease or grant, (3) site assessment, and (4) construction operations.[94] The authorization process begins with a call for information and nominations (the call). In this regard, the Task Force will help BOEM identify the initial "call area." This is the area initially proposed or considered by BOEM for a potential lease. BOEM will initiate the call and invite formal public comments about the specific call area, uses and concerns, and nominations of interest for development in this area.[95] Draft call areas will be presented and discussed by the Task Force before publication in the *Federal Register*. After the call has been published and public comments received, BOEM identifies Wind Energy Areas (WEAs) using the gathered feedback and information from the Task Force.[96] WEAs are areas within the OCS most suitable for commercial wind energy activities while presenting the fewest apparent environmental and user conflicts. This subset of the initial call area identified by BOEM will undergo environmental review, site characterization, and site assessment.[97]

A "lease area" is an area BOEM would offer for lease during an "issuance of a lease or grant." WEAs form the basis for BOEM's "lease area" and are typically areas where there is the least amount of conflict that will support an offshore wind project.[98] These areas may be further narrowed by the WEAs following environmental review. This marks the end of phase one in the BOEM project authorization process. For example, about five new WEAs were created by the BOEM in the New York Bight with a total capacity of 9,800 MW.[99] At the same time, about 15 projects in the U.S. offshore pipeline have reached the permitting phase, and eight states have set offshore wind energy procurement goals for a total of 39,298 MW by 2040.[100]

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[93] *Id.* at § 5(C). "Tribe" is defined as "[a]ny American Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994. *Id.* at § 5(A). "ANCSA Corporations" are defined as "[a]ny Alaska Native village corporation, urban corporation, or regional corporation as defined in, or established pursuant to, the Alaska Native Claims Settlement Act." *Id.* at § 5(B).

[94] BUREAU OF OCEAN ENERGY MGMT., *supra* note 42, at 6 – 9.

[95] COMAY & CLARK,, *supra* note 6, at 6 – 7.

[96] *Id.*

[97] *Id.*

[98] *Id.*

[99] *Id.*

[100] U.S. DEP'T OF ENERGY, THE OFFSHORE WIND MARKET REPORT: 2021 EDITION 7 (2021), https://www.energy.gov/sites/default/files/2021-08/Offshore%20Wind%20Market%20Report%202021%20Edition_Final.pdf. This report issued by the DOE's Wind Energy Technologies Office is intended to provide offshore wind

B. The Task Force in Oregon

Following the growing commercial and political interests in energy resources in the Pacific region, Oregon requested that a state-federal task force be established to address the potential for developing renewable energy offshore Oregon in 2010.[101] The Oregon Department of Land Conservation and Development (DLCD) Coastal Management Program (OCMP) was designated as the State agency charged with coordination with BOEM for offshore wind development efforts.[102] In 2011, Oregon's BOEM Intergovernmental Renewable Energy Task Force (OR Task Force) was established.[103] Consequently, the BOEM and DLCD developed the Data Gathering and Engagement Plan (DGEP) for Offshore Wind Energy in Oregon as a proactive offshore wind planning approach in response to growing interest in the wind energy sector.[104] The DGEP serves as the guiding document for offshore wind development in Oregon. The first phase in the DGEP is a year-long data gathering and engagement effort to inform BOEM's lease area authorization process.[105]

During the data gathering and engagement process,[106] various stakeholder groups reportedly expressed concerns about the potential loss of commercial and recreational fishing grounds and requested siting offshore wind energy projects in areas already closed off to or used less by the fishing industry.[107] Some stakeholders also raised concerns related to breeding habitats for seabirds and pelagic birds, impacts on marine species' habitat and migration, and how effects on wildlife might affect the fishing industry. Lastly, stakeholders showed interest in how offshore wind would impact Oregon's energy portfolio.[108] However, this

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policymakers, regulators, developers, researchers, engineers, financiers, supply chain participants, and other stakeholders with up-to-date quantitative information about the offshore wind market, technology, and cost trends in the United States and worldwide.

[101] BUREAU OF OCEAN ENERGY MGMT., DRAFT DATA GATHERING AND ENGAGEMENT SUMMARY REPORT OREGON OFFSHORE WIND ENERGY PLANNING 8 (OCT. 2021) - 9.

[102] *Id.*

[103] *Id.*

[104] *Id.* at 72.

[105] Throughout the year-long data gathering and engagement process, BOEM and DLCD held sixty meetings and engaged with over 1,200 participants, including individuals who represented research organizations, tribes, coastal communities, ocean users, elected officials, environmental organizations, agency officials, and the general public. The BOEM served as the lead agency for tribal engagement because of the agency's trust responsibility to federally recognized tribes. BUREAU OF OCEAN ENERGY MGMT., *Overview of Oregon Offshore Wind Energy Planning and Engagement Activities*, (Oct. 21, 2021), https://www.boem.gov/renewable-energy/state-activities/overview-oregon- offshore-wind-energy-planning-and-engagement (last visited Mar. 12, 2022).

[106] Data and Engagement Report, *supra* note 79, at 29.

[107] These concerns are like sentiments expressed recently by the fishing industry in North Carolina on the east coast. David Larson, *Offshore wind turbines interfere with ships' radar, ability to navigate, study finds*, CAROLINA JOURNAL (Mar. 9, 2022), https://www.carolinajournal.com/offshore-wind-turbines-interfere-with-ships-radar-ability-to-navigate-study-finds/.

[108] Data and Engagement Report, *supra* note 79, at 30–31.

interest was coupled with concern over how offshore wind might affect tax and electricity rates and other areas of the economy, such as job displacement in the fishing industry relative to new jobs in the energy industry.[109]

In addition to BOEM and DLCD's data gathering and engagement efforts, other members of the OR Task Force have engaged in research relevant to BOEM siting determinations that have, in turn, been shared with the OR Task Force. Cross-pollination of ideas is one valuable role that BOEM Task Forces play. The Task Force acts as a forum for sharing information and a platform for shopping for input and gathering new resources and information.

C. Offshore Wind Energy Studies

The National Renewable Energy Lab (NREL), under the DOE, has engaged in several activities on the Pacific Coast regarding the development of floating offshore wind technologies, including costs and feasibility studies offshore Oregon.[110] These studies looked at reference sites to analyze the Levelized Cost of Energy (LCOE) for floating offshore wind and the grid impact of Oregon wind energy from offshore Oregon.[111]

The U.S. Coast Guard has conducted a Pacific Coast Port Access Route Study under its authority through the Ports and Waterways Safety Act (PWSA) (P.L. 95-474; 33 U.S.C. 1223). The Port Access Route Study is required before establishing or adjusting new fairways and traffic separation schemes. The study aims to ensure maritime safety by blocking areas for development that would create obstructions to navigation.[112] The study utilizes data on vessel incidents, environmental factors, economic factors, public comments, commercial and government waterway development, and fisheries to make suitability recommendations that the Task Force will consider.[113] In turn, the Coast Guard relies on the Task Force to provide additional, relevant information to be considered in the study.

BOEM is also engaged in a Pacific Avian Study, studying migration patterns, mating patterns, and species diversity on the OCS.[114] The study aims to identify the impacts of offshore wind development on onshore, nearshore, and aquatic birds.[115] The study area encompasses habitat for four Endangered Species Act

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[109] *Id.* at 29.
[110] *See generally* NREL, OREGON OFFSHORE WIND SITE FEASIBILITY AND COST STUDY (Oct. 2019), https://www.nrel.gov/docs/fy20osti/74597.pdf.
[111] NREL, *Updated Oregon Floating Offshore Wind Cost Modeling* (Sept. 24, 2021) https://www.nrel.gov/docs/fy22osti/80908.pdf ; NREL, EVALUATING THE GRID IMPACT OF OREGON OFFSHORE WIND (2021), https://www.nrel.gov/docs/fy22osti/81244.pdf.
[112] Jamie Damon, *BOEM Oregon Intergovernmental Renewable Energy Task Force Meeting Webinar Presentation*, https://www.boem.gov/renewable-energy/state-activities/boem-oregon-tf-presentation .
[113] *Id.*
[114] *Dave Pereksta, Avian Biologist BOEM Pacific Office*, *BOEM Pacific Avian Study Strategy,* in Jamie Damon, supra note 113, at 163–84. , .
[115] *Id.*

species and 66 species with some special status on the Pacific OCS and coast.[116] Hazards identified by the study include: collision with wind turbines' avoidance, meaning displacement from feeding grounds and movement barriers for migration and feeding; and attraction, such as prey base and habitat alteration/completion, light attraction/disorientation, and perching for predators.[117] The study performs both broad-scale assessments (landscape level) and site-specific assessments with the goals of identifying baseline conditions, detecting changes associated with anthropogenic effects, evaluating the impact of past policies and management activities, and designing and implementing projects that will minimize adverse effects on marine resources to the maximum extent possible[118]

BOEM has also undertaken efforts to work with interested tribes along the Oregon coast and the areas around Humboldt and Morro Bays in California on establishing a West Coast Tribal Cultural Landscape.[119] To this end, BOEM has invited representatives from these tribes to build a better understanding of areas of cultural importance, termed "cultural landscapes," to make more informed decisions about the impacts of offshore wind development on tribes. Cultural landscapes have been defined as "any place in which a relationship, past or present, exists between a spatial area, resources, and an associated group of indigenous people whose cultural practices, beliefs, or identity connects them to that place. A tribal cultural landscape is determined by and known to a culturally related group of indigenous people with relationships to that place."[120]

Considering the above, the Task Forces have significant and diverse perspectives. Public input comes to the Task Forces through feedback provided to individual agencies and entities involved in research and engagement and information provided directly to them via their publicly held meetings.[121] Public input can direct Task Force members toward new issues and questions that may not have previously been considered, helps identify areas that require further research or clarification in how information is communicated, and allows members to recognize the synergy between their work and ongoing efforts by other stakeholders. Additionally, the Task Forces serve as an opportunity for information to be exchanged between Task Force members, leading to alterations and additions to research and engagement tools.

V. The Cost(s) of Integration and International Developments

Most energy projects, including offshore wind technologies, are capital intensive and require a long timeframe for completion. As a result, factors such as

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[116] *Id.*
[117] *Id.*
[118] *Id.*
[119] Dave Ball, Historic Preservation Officer BOEM Pacific Office, West Coast Tribal Cultural Landscapes, in Damon, supra note 113, at 185–92.
[120] *Id*. at 187.
[121] BUREAU OF OCEAN ENERGY MGMT., *supra* note 42, at 3.

Levelized Costs of Electricity (LCOE)[122] and the value of an additional capacity delivered to the power grid from the new planned systems typically change over time. When negotiating the initial power project contracts, making engineering and construction arrangements, undertaking necessary surveys, etc., there is bound to be incomplete information regarding future market scenarios, cost dynamics, and policy changes. Regulatory uncertainties due to cumbersome permitting, assessment, and approval process worsened due to avoidable conflicts of interests will also have an impact on delaying and escalating costs and, in some cases, project cancellations, as seen in the Cape Wind project.

Some essential questions to ask here are: how would the emerging technologies that are used in nascent industries like the U.S. offshore wind industry remain competitive over the mid- to long-term? What role(s) will such technologies play within the context of the power supply value chain, and what factors will influence such role(s)? It is noted that the EIA evaluates the LCOE, LCOS, and LACE for each technology based on assumed capacity factors, which generally correspond to the high end of their likely utilization range.[123] This convention is consistent with using LCOE and LCOS to evaluate competing technologies in baseload operations such as coal and nuclear plants. Although sometimes used in baseload operation, some technologies, such as CC plants, are also built to serve load-following or other intermediate dispatch duty cycles. Combustion turbines typically used for peak-load duty cycles are evaluated at a ten percent capacity factor, reflecting the historical average utilization rate. Battery storage is also assessed at a ten percent capacity factor, reflecting an expected use for energy arbitrage, especially with intermittent renewable generation such as solar generation.

The operational cycles for intermittent resources such as wind and solar are not operator controlled, but rather depend on the weather, which does not necessarily correspond to operator-dispatched duty cycles. As a result, LCOE values for wind and solar technologies are not directly comparable with the LCOE values for other technologies that may have a similar average annual capacity factor. Hence, wind and solar technologies are usually classified as non-dispatchable technologies.[124]

Globally, the LCOE for offshore wind fell by 20 percent between 2010 and 2018. Likewise, the total installed costs for projects commissioned in 2018 were five percent lower than those commissioned in 2010.[125] According to the IRENA, the major drivers of this reduction in the cost of electricity from offshore wind—which also underpins its relative competitiveness—include innovations in wind

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[122] LCOE and levelized cost of storage (LCOS) represent the average revenue per unit of electricity generated or discharged that would be required to recover the costs of building and operating a generating plant and a battery storage facility, respectively, during an assumed financial life and duty cycle. The levelized avoided cost of electricity (LACE) is the revenue available to that generator during the same period. U.S. ENERGY INFO. ADMIN., LEVELIZED COSTS OF NEW GENERATION RESOURCES IN THE ANNUAL ENERGY OUTLOOK 2022, https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf.

[123] *Id.*

[124] *Id.*

[125] Int'l Renewable Energy Agency, *Renewable Power Generation Costs in 2018*, 23 (2019). https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/May/IRENA_Renewable-Power-Generations-Costs-in-2018.pdf.

turbine technology,[126] installation, and logistics; economies of scale in operations and maintenance of larger turbine and offshore wind farm clustering; and improved capacity factors from higher hub heights, better wind resources (despite increasing cost in deeper waters offshore), and larger rotor diameters.[127]

The trend towards larger turbines, which expand the capacity of a wind farm and/or reduce the number of turbines required for a given capacity, has helped to reduce installation costs and project development costs below what they would otherwise have been.[128] However, this reduction has been offset, to a greater or lesser extent, by the shift to offshore wind farms being located in deeper waters further from ports but often with better, more stable wind regimes.[129] However, as noted earlier, bigger and more spread-out wind farms potentially imply more careful planning to avert risks to the maritime zones' environment and equally legitimate conflicting uses. It presupposes those reviews under the ESA, NEPA, and MBTA are likely critical and worth assessing. Likewise, alternative use of maritime zones for fishing and recreation or security services are also relevant.

Reductions in project development and maintenance costs influence the affordability and eventual price to be paid by end-users. The costs could also escalate due to avoidable controversies and permitting bottlenecks discussed earlier. A recent BOEM study regarding Northern California's Offshore wind generation and load compatibility assessment with emphasis on electricity grid constraints, mitigation measures, and associated costs examined the value and role of offshore wind systems in the three market avenues.[130] Offshore wind energy could be deployed in the resource adequacy (RA) market, the ancillary services market (AS), and the energy market. Accordingly, offshore wind was compared to California solar, and land-based wind in California, New Mexico, and Wyoming.[131] Due to the higher overall energy generated (expressed as a higher capacity factor), the expected revenue available per MW of offshore wind is significantly higher than land-based wind or solar.[132] In other words, each megawatt of installed offshore wind generates more megawatt-hours (MWh) compared to other variable renewable energy resources. However, the value per MWh of offshore wind is approximately the same. It is also interesting to note that the report states that approximately four percent of the annual revenue is through resource adequacy

[126] Increasing the size of turbines is also having the effect of reducing the number of foundation positions and inter-array cabling, which is reducing installation and operation, and maintenance costs.

[127] *Id.*

[128] *Id.*

[129] *Id.*

[130] BUREAU OF OCEAN ENERGY MGMT., NORTHERN CALIFORNIA OFFSHORE WIND GENERATION AND LOAD COMPATIBILITY ASSESSMENT WITH EMPHASIS ON ELECTRICITY GRID CONSTRAINTS, MITIGATION MEASURES AND ASSOCIATED COSTS 7.2 (2020), https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/environmental-science/BOEM-2020-045.pdf. Energy and AS prices are based on historical 2019 data, while RA revenues are based on a combination of 2020 effective load carrying capacity and projected 2022 resource adequacy payments.

[131] *Id.*

[132] *Id.*

capacity payments, one percent through participation in ancillary services markets, and 95 percent through energy generation and participation in energy markets.[133] Therefore, in planning the integration of new offshore wind capacity, one could expect the systems to serve the energy market more than the markets designed to serve resource or capacity adequacy and provide ancillary services to the grid.[134]

A. Standardization and Streamlining the Process

Despite the technological gains and federal and state incentives that have helped to reduce development and installation costs, there are still considerable regulatory and commercialization hurdles and tradeoffs that may impact the costs of development and operations going forward. Efficiently standardizing and streamlining the permitting process without compromising important environmental, social, economic, and safety requirements are arguably part of avoiding the opportunity costs of delayed and canceled projects in the medium- to long-term.

There have been many commentaries regarding enhancing the pace of permitting and carrying out potential changes to its regulations, fostering increased coordination with other federal agencies—including the DOE and the Department of Commerce's National Marine Fisheries Service—and standardizing its environmental review process. Senior officials for the BOEM recently hinted that the agency is exploring ways to standardize its environmental reviews of offshore wind projects and further collaborate with other federal agencies and states in both approving projects. This is not surprising considering the Biden administration's ambitious goal of installing at least 30 GW of offshore wind power by 2030. Developing such a harmonized framework for reviews and regulatory decision-making processes may reduce costs, avoid unnecessary controversies, and help address the misperception of risks. It may also help to reduce the risk of political interference in administrative decision-making obligations for the agencies involved. Some relevant questions worth asking are: what stage of the project approval process is best to have a full EIS as opposed to an EA only to have the likelihood of a full EIS two years after a lease is issued and the COP is submitted for approval? Should the BOEM adopt a full or comprehensive Programmatic Environmental Impact Statements (PEIS) at a very early stage before issuing a RFI or Call for Information and Nominations; or should such PEIS be developed on a regional basis, considering the peculiarities of developments in, for instance, the west coast vis-à-vis east coast?[135]

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133 *Id.* at 7.16.

134 Offshore wind's value is generally higher than its onshore counterpart and more stable over time than that of solar PV, which has a concentrated output during daylight hours. Its energy value (equivalent to the average price received for energy sold to the market) depends on the pattern of demand and the power mix, but in most cases remains close to the average wholesale electricity price over the year.

135 Generally, environmental reviews under NEPA, 42 U.S.C. §§ 4321-70, may be on the project-specific or broader programmatic level. The analyses in a programmatic NEPA review are carried out to outline the broad view of environmental impacts and benefits for a proposed decision, rulemaking or project plans requiring NEPA assessments. Such a programmatic NEPA review can

An Alternative Energy and Alternate Use Program on the OCS was established following NEPA amendment of Section 8 of the OCSLA (43 U.S.C. § 1337), which empowered the DOI to, among other things, issue leases, easements, or rights-of-way on the OCS for the production, transportation or transmission of energy from sources other than oil and gas.[136] As a result, the PIES was considered to examine the potential impacts of the production and transmission of alternative energy (which includes offshore wind) and alternate use activities that could result from the grant of leases, easements, and rights-of-way from initial site characterization through decommissioning. The PEIS requires that environmental consequences and potential mitigation measures be examined at a broader scale than would be appropriate for site-specific projects.[137] Therefore, according to NEPA, additional environmental review will be required for all future site-specific projects on the OCS. The PEIS idea also led to developing policies and best management practices (BMPs) that the Alternative Energy and Alternate Use Program may adopt as mitigation measures.[138]

The BOEM's guide on PEIS for alternative energy development and uses recognize that having such a program in place for permitting would result in decreased time to obtain permits, facilitating faster growth of the alternative energy industry on the OCS.[139] An alternative to institutionalizing the PIES approach is reviewing projects on a case-by-case basis as developers submit them. Such a case-by-case alternative would not have the same comprehensive, formal regulations for granting and managing a lease, rights-of-way, rights-of-use or easement, or the same information requirements as the proposed action. The case-by-case approach has been the norm over the years, especially considering the highlighted experiences concerning the Cape Wind and Vineyard Wind projects.[140]

Individual offshore wind lessees and project developers must submit necessary information on social and economic conditions and "recreational and commercial fishing (including typical fishing seasons, location, and type)" that could be

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then be relied upon when agencies make decisions based on the programmatic EA or PEIS, as well as decisions based on a subsequent (also known as tiered) NEPA review. It is expected to result in clearer and more transparent decision-making, as well as provide a better defined and more expeditious path toward decisions on proposed actions. This program would also provide a road map for developers to follow during the permitting process, allowing developers to more adequately estimate the resources required for a proposed project. This would in turn result in fewer failed proposals because developers would know the requirements before investing in projects or locations. *See* Council on Environmental Quality, Final Guidance for Effective Use of Programmatic NEPA Reviews, 79 Fed. Reg. 76986(Dec. 23, 2014).

[136] BUREAU OF OCEAN ENERGY MGMT., *supra* note 22, at ES-2.

[137] Council on Environmental Quality, Final Guidance for Effective Use of Programmatic NEPA Reviews79 Fed. Reg. 76986(Dec. 23, 2014).

[138]BUREAU OF OCEAN ENERGY MGMT., *supra* note 22, at ES-2.Such policies and BMPs are intended to decrease the environmental impacts of alternative energy activities by including consistent stipulations for data collection, facility siting, mitigation, and ongoing impact evaluation.

[139] *Id.* at ES-3.

[140] *Id.*

affected by the lessee's proposed activities.[141] It must stipulate project-specific information, as well as the proposed mitigation measures for avoiding, minimizing, reducing, eliminating, and monitoring environmental impacts.[142] As discussed above, such information goes a long way in supporting BOEM and other agencies' role in making an informed decision in accordance with the relevant laws and regulations designed to protect the environment and other legitimate uses of the OCS. As far as offshore wind energy developments are concerned, industry and regulatory agencies typically opine that most impacts would be negligible to moderate, assuming that proper siting and mitigation measures are followed. However, controversies and avoidable delays may arise if stakeholders and impacted communities aren't properly informed of the potential risks and mitigation measures in a clear and transparent manner.

B. The UK's Offshore Wind Project Approval Framework

Offshore wind development has gained significant traction globally in places like China, the E.U., and the U.K. A stable legal and policy environment was key in supporting the deployment of about 17 GW of offshore wind capacity additions in Europe between 2010 and 2018.[143] The U.K., Germany, Belgium, Netherlands, and Denmark together added 2.7 GW of capacity in 2018 alone.[144] In 2018, China added 1.6 GW of offshore wind capacity largely due to its 13th Five-Year Plan, which called for five GW of offshore wind capacity to be completed by 2020 and the establishment of supply chains to support further expansion.[145] Considering these global experiences, one could say that the risks and best practice standards for offshore wind projects are now better understood by operators or agencies globally. In addition, most of the leading operators in the U.S. offshore wind energy space are international firms (such as Norway's Equinor and Denmark's' Ørsted) with significant know-how and experience in the very complex and capital-intensive sector.[146] Thus, there are opportunities for knowledge sharing and developing standardized processes that work for all stakeholders.

The U.K. has grown into the world leader in offshore wind, with greater installed capacity than any other nation.[147] Accounting for over a quarter of the total global portfolio, the U.K. dominates the offshore wind market and plans to continue

[141] U.S. DEP'T OF INTERIOR, GUIDELINES FOR MITIGATING IMPACTS TO COMMERCIAL AND RECREATIONAL FISHERIES ON THE OUTER CONTINENTAL SHELF PURSUANT TO 30 CFR PART 585, at 1 (2022), https://www.boem.gov/sites/default/files/documents/renewable-energy/DRAFT%20Fisheries%20Mitigation%20Guidance%2006232022_0.pdf.
[142] *Id.*
[143] INT'L ENERGY AGENCY, SUPRA NOTE 7, AT 16–17.
[144] *Id.*
[145] *Id*. at 31.
[146] *Id.* at 63. See also U.S. DEP'T OF ENERGY, supra note 71, at 7.
[147] Ørsted, *Offshore Wind*, https://orsted.co.uk/energy-solutions/offshore-wind (last visited Nov. 9, 2021).

growing its portfolio.[148] As the country begins phasing out all coal-fired power plants by 2025, government leaders are placing even more emphasis on the growth of offshore wind to account for lost capacity. With over ten GW of installed capacity, the U.K. plans to quadruple power to 40 GW by 2030.[149]

Two major factors have led to the U.K.'s success with offshore wind. First, the U.K's long coastline, with its reliable wind speed and shallow seabed, boasts the ideal geography for offshore wind development.[150] Second, the country's open and transparent licensing and permitting processes have made the nation one of the most attractive destinations for international companies. Between 2010 and 2017, the country accounted for 48 percent of all new offshore wind developments in Europe, with approximately €40 billion euros invested.[151] This is partly due to the streamlined permitting process, which offers a degree of certainty of timeframes once an application is submitted. The streamlined process allows all development phases to be accepted in one application.

Before getting involved in any potential offshore wind project, companies must fully understand the project's regulatory timeline and all key stakeholders involved. While the process is relatively streamlined compared to other nations, the process still involves several governmental bodies and requires various permits and leases.[152] The licensing and permitting process takes roughly nine years in the U.K., and developers must first obtain an Agreement to Lease (AfL) the seabed from the Crown Estate, which takes approximately two years. Developers must then apply for a Development Consent Order (DCO) from the Secretary of State for Business, Energy, and Industrial Strategy via the Planning Inspectorate. This process can last up to five years.[153] Lastly, developers must participate in Contract for Difference (CfD) auctions to gather support to build and run the offshore wind

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[148] Claudia Colombo, *United Kingdom Offshore Wind Market*, U.S. DEP'T OF COMMERCE INT'L TRADE ADMIN. (Apr. 8, 2021), https://www.trade.gov/market-intelligence/united-kingdom-offshore-wind-market. The UK comprises of England, Wales, Northern Ireland, and Scotland. There are peculiar constitutional arrangements that may impact the extent of the 'Crown Estates' role regarding offshore wind in the U.K. as a whole. A licensing round means a program organized for issuing leases and related permits etc. so such a program will have helpful guidelines and documents such as the Leasing Round Four Information Memorandum.

[149] Neil Ford, *UK faces tough pricing choices to fill offshore wind supply gaps*, REUTERS EVENTS (Dec. 9, 2020) https://www.reutersevents.com/renewables/wind/uk-faces-tough-pricing-choices-fill-offshore-wind-supply-gaps.

[150] *Id. See also* Colombo, supra note 151.

[151] Tallat Hussain, *Offshore wind projects: Assessing the environmental impact: United Kingdom*, JDSUPRA (May 4, 2019), https://www.jdsupra.com/legalnews/offshore-wind-projects-assessing-the-55253/.

[152] Colombo, *supra* note 151. *See also* INT'L ENERGY AGENCY (IEA), ENERGY POLICIES OF IEA COUNTRIES: UNITED KINGDOM 2019 REVIEW 133–139 (June 2019). pp. 59 – 64 https://iea.blob.core.windows.net/assets/298930c2-4e7c-436e-9ad0-2fb8f1cce2c6/Energy_Policies_of_IEA_Countries_United_Kingdom_2019_Review.pdf.

[153] *Offshore Wind Leasing Round 4*, CROWN ESTATE (Sept. 2021), https://www.thecrownestate.co.uk/round-4/.

farm.[154] As the U.K. Government's main mechanism for supporting low-carbon electricity-generating projects while minimizing costs to billpayers, CFDs are private law contracts between a generator and the Low Carbon Contracts Company (LCCC) in a standard template form published by the U.K.'s Department for Business, Energy and Industrial Strategy (DBEIS).

1. Permitting the Crown Estate – Seabed Leases

The first step in developing offshore wind as prescribed under the Leasing Round Four requires obtaining an AfL from the Crown Estate. An AfL from the Crown Estate grants the right to develop and produce energy from the wind resources within the area covered by the lease over a specified section of the seabed.[155] The entire process for a company hoping to obtain an AfL from the Crown Estate takes roughly two years and requires detailed project proposals. However, the overall process takes approximately four years as the Crown Estate spends roughly the first two years gathering stakeholder comments and determining where seabed development should occur. Under the Crown Estate Act of 1961, the Crown Estate has the statutory duty to maintain and enhance the estate's value, with all revenues generated by the estate being given to the U.K. Treasury.[156] It serves as the manager of the U.K.'s's seabed out to 12 nautical miles. It possesses the privilege of utilizing natural resources to generate electricity within the U.K. Exclusive Economic Zone (EEZ).[157]

Offshore Wind Leasing Round Four is a good representation of the process to obtain an AfL and provides us with a relative timeline. The first step in receiving an AfL is submitting a Pre-qualification Questionnaire (PQQ).[158] By assessing potential bidders' financial capability, legal compliance, and technical experience, the PQQ authorizes successful bidders to qualify for the second stage of the leasing process. After qualifying, bidders submit potential projects assessed by the Crown Estate for financial and technical robustness. This second step, called the Invitation to Tender Stage One (ITT Stage One), typically lasts several months.[159] For Offshore Wind Leasing Round 4, the ITT Stage One process lasted from Spring to Summer of 2020. Bidders' project proposals must show all potential economic and environmental impacts. Once the bidders' project proposals have been approved through ITT Stage One, the bidders become recognized as Eligible Bidders with Eligible Projects.

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[154] *Id*. *See also* Stephen Naimoli, *The United Kingdom's Offshore Wind Industrial Strategy*,Ctr. Strategic & Int'l Stud.tl (Oct. 21, 2021),https://www.csis.org/analysis/united-kingdoms-offshore-wind-industrial-strategy.

[155] BUREAU OF OCEAN ENERGY MGMT., PHASED APPROACHES TO OFFSHORE WIND DEVELOPMENTS AND USE OF THE PROJECT DESIGN ENVELOPE 6 (July 2017), https://www.boem.gov/sites/default/files/environmental-stewardship/Environmental-Studies/Renewable-Energy/Phased-Approaches-to-Offshore-Wind-Developments-and-Use-of-Project-Design-Envelope.pdf [hereinafter Phased Approaches to Offshore Wind Developments].

[156] *Id.* at 53.

[157] *Id.*

[158] Crown Estate*, supra* note 156.

[159] *Id.*

Once recognized as an Eligible Bidder with an Eligible Project, the multi-cycle bidding process continues with Invitation to Tender Stage Two (ITT Stage Two).[160] This third step happens in two phases, each taking approximately six months. During the first phase, the Crown Estate issues tender documentation temporarily approving potential project bids. Once all necessary documentation has been issued, the second phase begins. The second phase consists of Bidding Cycles, where the Crown Estate uses option fees bids to award leases. Only one project is awarded per daily Bidding Cycle to guarantee the value of the estate's worth, with Bidding Cycles continuing until the maximum gigawatts are reached or exceeded.[161] For example, Offshore Wind Leasing Round Four's ITT Stage Two took place over nine months, with the first phase in the Fall of 2020 and the second in early 2021. The Crown Estate granted options until the proposed seven GW were met but could have awarded up to eight-and-a-half GW.

The fourth and ultimate step before receiving an AfL requires a Plan-Level Habitats Regulations Assessment (HRA).[162] As a Competent Authority under the HRA, the Crown Estate considers the potential impacts on the U.K.'s valuable species and habitats. Estimated to last between nine and twelve months, the HRA considers all environmental impacts and is the lengthiest portion of obtaining an AfL. However, subject to the findings of the HRA, the Crown Estate will enter into Wind Farm Agreements with all successful bidders.

During this entire process, the Crown Estate relies on stakeholder engagement to guarantee to continued success and safety of its seabed.[163] It determines locations for offshore wind development based on the current Offshore Energy Strategic Environmental Assessment (OESEA). When it decides to host a new offshore wind leasing round and is looking for potential seabed areas to develop, it contacts the U.K. and Devolved Governments, statutory marine planners, and regulators to share the possible plans.

Over the last twelve years, OESEA, OESEA2, and OESEA3 have begun looking at offshore wind and gathering stakeholders' concerns. The OESEA occurs before site identification and aims to assess any program's environmental and sustainability aspects. OESEAs examine major national plans and programs to determine overreaching themes and mitigation measures. OESEA3, completed in 2020, enables future renewable leasing for offshore wind and wave and tidal devices.[164]

All OESEAs undergo a rigorous process to guarantee that stakeholder concerns and comments are heard. The Department uses five main ways to gather stakeholder feedback and comments.[165] First, after a draft publication is posted

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[160] *Id.*

[161] *Id.*

[162] *Id.*

[163] CROWN ESTATE, *supra* note 156

[164] DEP'T FOR BUS., ENERGY & INDUS. STRATEGY, *Offshore Energy Strategic Environmental Assessment (SEA): An overview of the SEA process* (Aug. 11, 2021), https://www.gov.uk/guidance/offshore-energy-strategic-environmental-assessment-sea-an-overview-of-the-sea-process.

[165] *Id.*

online, the Department for Business, Energy & Industrial Strategy begins accepting stakeholder comments virtually. Second, the Department begins scoping fundamental issues of concern amongst stakeholders to guarantee these concerns are considered in appropriate detail. Through scoping, the Department locates key information gaps and provides addendums for all stakeholders to best understand the publication. Third, the Department holds several workshops with government entities, non-governmental organizations, the general public, and other entities. Fourth, the environmental report is published for formal public consultation, allowing the Department to gain insight from stakeholders with expertise. Lastly, after the closing of the consultation period, the Department considers all comments and produces a post-consultation report, where the Department summarizes all comments and responds appropriately to each.[166] By incorporating the OESEA into its decision-making, the Crown Estate guarantees that stakeholder concerns and interests are heard and recognized from the start of the process. Based on the OESEA, the Crown Estate begins drafting a proposal locating potential seabed for lease and outlining their reasoning.

After discussing potential plans with the regulatory bodies, the Crown Estate begins hosting engagement workshops where stakeholders are allowed to speak directly with representatives. These workshops are meant to cover many issues, including fishery concerns, cultural heritage issues, and many others. During the Offshore Wind Leasing Round Four workshops, around 30 stakeholders representing 15 different organizations attended the in-person workshops.[167] After refining their proposed seabed development, the Crown Estate hosts a second round of workshops via several webinars. Overall, the Crown Estate received over 500 points of feedback from over 20 organizations ranging from environmental groups such as the Wildlife Trusts to historical preservation organizations like Historic England.[168] Their engagement included 15 governmental bodies, 40 market participants, and 30 different organizations totaling around 400 total people attending their five engagement events.[169]

To conclude their stakeholder engagement, the Crown Estate releases a "Summary Stakeholder Feedback Report" where they address and summarize stakeholder comments.[170] By infusing stakeholder comments into seabed location determinations and later on the HRA, the Crown Estate can show its willingness to listen to stakeholders' concerns. Obtaining an AfL from the Crown Estate generally takes around four years from the time the Crown Estate determines the feasibility of seabed development to the official granting of a Wind Farm Agreement. A lease of the seabed or seabed utilization rights is given once the developer has received the necessary statutory consent from the relevant planning authority (or authorities) and fulfilled all other conditions specified in the AfL.[171] A typical wind farm lease

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[166] *Id.*

[167] CROWN ESTATE, *supra* note 156, at 10.

[168] *Id.* at 13.

[169] *Id.* at 26.

[170] *Id.*

[171] Julian Pollock & Ruth Benfield, Offshore power projects: Crown Estate lease*, Practical Law UK Practice Note w-002-5727* (last visited Nov. 22, 2021)

grants the lessee rights to construct and operate wind power generation assets for a fixed term. The standard term under the licensing round three was 50 years, while round four wind projects are offered a 60-year term.[172] Following the execution of the Wind AfL, there is also a transmission AfLs after a grid connection agreement is finalized and the Crown Estate has separately approved the cable route. Among other things, the transmission AfL grants the developer rights to the designated area on which the offshore substation is located, including the export cable routes and rights to use the seabed and cable routes.[173]

2. *Development and Consenting*

Under the Planning Act 2008 U.K. (Planning Act), companies hoping to develop offshore wind power projects with more than one hundred megawatts of capacity—which are defined as nationally significant infrastructure projects (NSIP)—are required to obtain a Development Consent Order (DCO) from the Secretary of State for Business, Energy & Industrial Strategy (Secretary of State) via the Planning Inspectorate.[174] The Secretary of State grants or denies a DCO based on the recommendation of the Planning Inspectorate.[175]

The DCO incorporates several consents, including a marine license and onshore approvals. The DCO replaces the need for historically necessary consents such as planning permission under the Town and Country Planning Act of 1990 and listed building and conservation area consent controlled by the Planning Act of 1990.[176] This is one reason the U.K. is attracting international business. The nation's permitting process allows for all phases of development—from environmental impact studies to economic concerns—to be accepted in one application.

Companies must work with government entities depending on where the project is located. For example, if the offshore wind project is located in Wales, Natural Resources Wales determines the marine license approval.[177] Whereas in Northern Ireland, the Marine Strategy and Licensing Team housed in the Department of Agriculture, Environment, and Rural Affairs controls both the overall consent application and marine license approval.[178] In Scotland, the Crown Estate Scotland (CES) is responsible for managing the rights for offshore renewable energy on the seabed around Scotland. The CES runs its offshore wind leasing round, ScotWind. Nevertheless, the respective permitting and leasing processes are very similar no matter which government entity has jurisdiction.

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[172] *Id.*
[173] *Id.*
[174] Hussain, *supra* note 154.
[175] BVG ASSOCS., GUIDE TO AN OFFSHORE WIND FARM 17 (2019), https://www.thecrownestate.co.uk/media/2860/guide-to-offshore-wind-farm-2019.pdf.
[176] Phased Approaches to Offshore Wind Developments, *supra* note 158, at 53.
[177] BVG ASSOC., *supra* note 175, at 17.
[178] *Id.*

The Planning Act process was created to streamline decision-making for all nationally significant infrastructure projects (NSIPs).[179] There are six stages of the Planning Act process, and the process generally takes about five years. The first stage is the Pre-application stage, where the applicant submits their development proposal. The development consent process is front-loaded, meaning that the applicant's proposal must be fully refined and polished before being submitted to the Planning Inspectorate.

To fully refine and polish their proposal, the applicant must take several additional steps to guarantee all environmental concerns are included in the application. First, the applicant must have considered any alternatives and included these alternatives with their initial draft plans.[180] Second, based on the development's location, various regulatory agencies then screen the proposal to determine if an EIA is needed. To best determine if an EIA is necessary, the agencies may collect data through surveys; these surveys could be multi-year surveys due to any birds or marine mammals.[181] If an EIA is required, the agencies will begin scoping the project's proposed location, focusing only on the aspects of the environment that are likely to be significantly impacted.[182] The UK's EIA process relatively mirrors the U.S.'s EIS and can take several years if there is potential for significant impacts. A Preliminary Environmental Impact Record (PEIR) will be produced based on the completed EIA and the agency's findings. The PEIR will summarize likely future environmental changes, summaries of any short or long-term surveys conducted, and various recommended mitigation measures.

During this stage, the applicant must also begin formally consulting with all statutory bodies, including local authorities, the local community, and any other affected persons depending on where the project is located.[183] Because the process is front-loaded, it leaves very little room for change once a proposal has been submitted. This is why all applicants need to formally consult with any entity impacted by the development. When the applicant enters the Pre-application stage, the Planning Inspectorate will set a deadline for stakeholder comments based on the complexity and scope of the project.[184] The applicant must then host various consultation events and be willing to respond to comments via email. After the deadline set by the Planning Inspectorate passes, the applicant must consider all stakeholder comments. This stage can take as much time as necessary and is controlled mostly by the applicant. The applicant's timeliness in hosting consultation events and speaking with stakeholders determines the length of the

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[179] Nat'l Infrastructure Planning, Plan Inspectorate, *Application Process*, https://infrastructure.planninginspectorate.gov.uk/application-process/the-process/ (last visited Nov. 9, 2021).

[180] Phased Approaches to Offshore Wind Developments, *supra* note 158, at 18.

[181] *Id.*

[182] *Id.*

[183] Plan Inspectorate, *supra* note 182.

[184] *Id.*

stage entirely.[185] As the development consent regime is front-loaded, the five steps following the Pre-application stage are much quicker.

Following the Pre-application stage is the Acceptance stage, where the application is formally submitted, and the Planning Inspectorate has 28 days to determine if all relevant documentation has been submitted properly.[186] If the Planning Inspectorate accepts the applicant, it is then published on the National Infrastructure Planning website for stakeholders to see. If the Planning Inspectorate denies the application, the applicant has six weeks to raise any legal challenges.[187]

Once the application has been accepted, the applicant moves into the Pre-examination stage. In the Pre-examination stage, the applicant must begin to publicize the application and provide information on how and when Interested Parties may get involved.[188] The period to register as an Interested Party is set by the applicant but must be no less than 28 days. Once the deadline for registration as an Interested Party has passed, the Planning Inspectorate and the applicant set a date for a Preliminary Meeting. At this Preliminary Meeting, parties will discuss procedural issues and set a timeline for the Examination stage. Once the timetable has been decided, all parties will be notified, and the process immediately moves into the Examination Stage.

The Examination Stage, the fourth stage of the process created by the Planning Act, begins the day after the Preliminary Meeting.[189] During this stage, the Planning Inspectorate appoints the Examining Authority. It conducts the examination through written comments and hearings where each Interested Party is entitled to share their observations through oral representation. The Examining Authority must consider all stakeholder concerns and any environmental impacts in the PEIR and include any mitigation measures. The Examination Stage must be completed within six months after the Preliminary Meeting.

After the examining authority completes its application review, they have three months to write its recommendation and submit it to the Secretary of State.[190] This next stage is referred to as the Recommendation and Decision stage. The Secretary of State makes the final decision based on the Examining Authority's recommendation. It is important to note that while the Secretary of State typically agrees with the Examining Authority, the Secretary of State has the power to make the final decision. Their decision must be made within three months of the Examining Authority's formal written recommendation submission.[191] The last stage of the development consent regime is the Post Decision Stage, which provides a six-week window for any party to challenge the Secretary of State's decision legally.

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[185] *Id.*
[186] *Id.*
[187] *Id.*
[188] *Id.*
[189] *Id.*
[190] *Id.*
[191] *Id.*

While the Development and Consenting process takes up to five years for large, complex projects, due to the front-loaded nature of the process, the developer has the control to determine just how long the Pre-application stage lasts. Once a developer's proposal has been completed and accepted through the Pre-application stage, the process takes roughly one year.[192] It takes approximately one year of the bureaucratic process after the application is received to obtain several consent licenses at once. This is why the U.K. is so attractive to international companies.

3. U.K. Contract for Difference Auctions

The last step in the U.K.'s offshore wind licensing and permitting process for developers is participating in CFD auctions.[193] These auctions can take up to two years and provide developers an avenue to finalize financial decisions and funding. This aspect is one of the notable distinctions between the U.S. and the U.K. power supply markets. In the U.S., institutions such as FERC and RTOs/ISOs are responsible for economic regulation and access to the respective energy markets and transmission networks. On the other hand, the U.K. has a different market structure and institutional framework.[194] Unlike in the U.S., the U.K. power market is the electricity market of Great Britain (GB). Northern Ireland, part of the U.K., operates a joint wholesale electricity market with the Republic of Ireland, the so-called single electricity market (SEM), in place since 2007.[195] GB wholesale electricity market is based on "self-dispatch," in which suppliers and generators contract to buy and sell power and must pay balancing costs if they under or over-deliver. Besides the energy market, GB also has a capacity market. Under the British Electricity Trading and Transmission Arrangements, Great Britain is now an SEM with a single price zone, despite congestion between Scotland and England and Wales.[196] Unlike the U.S., the U.K. has an LCCC established as the government counterparty for CFDs. It manages the CFDs with low-carbon generators throughout their lifetime, forecasts and settles CFD payments, and manages the Supplier Obligation Levy that funds CFD payments.

Similarly, the U.K.'s National Grid (NG) is the system operator whose responsibilities include integrating variable renewable energy sources (RES) in

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[192] *Id.*

[193] Colombo, *supra* note 153. Following the leasing process and the development and Consenting process, successful developers will move to the procurement and C.F.D phase in which they take part in auctions to bid for support to build and run the wind project.

[194] INT'L ENERGY AGENCY, *supra* note 155, at 133–39. The UK's power market is the electricity market of Great Britain (GB). Generation and supply are unbundled from transmission and distribution and from the system operation. The National Electricity Transmission System (NETS) is owned and maintained by different regional transmission companies. Scottish Power is the transmission owner for Central and Southern Scotland. Scottish Hydro Electric Transmission owns the transmission network of North Scotland. The National Grid Electricity Transmission (National Grid (NG)) is the transmission owner for England and Wales, but also the electricity system operator (ESO) in GB responsible for the balance of supply and demand, and system safety and security.

[195] *Id.* at 134.

[196] *Id.* at 135.

coordination with 14 distribution network operators. In a general sense, it could be opined that the NYISO or CAISO in the U.S., for instance, does for New York or California what the NG does for GB, England, and Wales. Although understandably, there are no CFD requirements in any U.S. power markets due to the structural peculiarities of both jurisdictions.

The CFD auctions are the U.K.'s main mechanism for supporting low-carbon electricity generation.[197] They are contracts between financial institutions and investors where the investors take a position on the future value of the offshore wind farm. Following the auction, the winning generators are guaranteed a certain electricity price (called a strike price) throughout a long-term contract. If the wholesale electricity price is below the agreed strike price, the generator will receive a top-up payment to make the difference.[198] The generator pays the surplus back if the wholesale price exceeds the contract price. The CFDs arguably enhance the predictability of expected income when investing in an asset subject to several variabilities and intermittency issues. Thus, it potentially helps reduce the cost of capital for new renewable energy projects, which have high up-front fees but low operational costs.[199]

The CFD framework allows traders and investors to capitalize on profit from price movement without owning the assets. By providing developers of offshore wind projects with high upfront costs and long lifetimes with direct protection from volatile wholesale prices, CFDs incentivize investment in renewable energy development. CFDs also protect customers from paying increased support costs if electricity prices are high.[200] After receiving an Agreement to Lease from the Crown Estate and a DCO, developers enter into a private contract with the LCCC. LCCC is a government-owned company that was established to be the counterpart of the CFD program. LCCC's primary goal is to manage the CFDs and to "maintain

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[197] The template CFD is divided into two parts: the front-end agreement (CfD Agreement), into which the project-specific details and variables determined by the allocation process are inserted (e.g., generator's name, facility description, installed capacity, strike price), and the standard terms and conditions (Standard Terms), which apply to all projects. Once the project has satisfied all the Operational Conditions Precedents, the generator will be paid the difference between the 'strike price' and the 'reference price' for the electricity they produce over the course of the contract. The strike price is a price for electricity in £/MWh determined through a sealed-bid process during the allocation round and, therefore, should reflect the cost of investing in a particular low-carbon technology. The reference prices used (either Baseload or Intermittent, depending on the technology) represent the average market price for electricity at the relevant point in time.

[198] INT'L ENERGY AGENCY, *supra* note 152 at 62.

[199] *Id.* CFD payments are raised through a levy on all GB electricity suppliers, who pass these costs on to consumers. The scheme has delivered substantial new investments and helped achieve significant reductions in the costs of some renewable technologies, particularly offshore wind. Notably, two offshore wind projects were awarded CFD deals at British pounds (GBP) 57.50 per megawatt hour (GBP/MWh) (EUR 64.10/MWh) – a 50 percent cost reduction from contracts awarded in 2015.

[200] *Policy Paper: Contracts for Difference*, U.K. Dep't Bus., Energy & Indus. Strategy (Dec. 14, 2022) https://www.gov.uk/government/publications/contracts-for-difference/contract-for-difference. *See also* Cory Mitchell, *An Introduction to Contract for Differences (CFDs)*, Investopedia, https://www.investopedia.com/articles/stocks/09/trade-a-cfd.asp (last visited Aug. 24, 2021).

investor confidence in the CFD scheme and minimize costs to consumers."[201] Developers received a flat rate for all the electricity they produced over fifteen years. This rate is the difference between the strike price, i.e., the price reflecting the cost of investing in the wind farm, and the reference price, i.e., the average market price for electricity in the United Kingdom.[202]

VI. Conclusion

Multiple federal, state, and local agencies, utilities, and other stakeholders are involved in assessing and reviewing offshore wind energy projects in the U.S. For instance, the BOEM solicits public comments, convenes Task Forces with interested states, and holds public meetings throughout the offshore wind development. There are also various avenues for public engagement and stakeholder comments during the Environmental Assessment and NEPA reviews process. Thus, coordination would be essential in realizing the technology's multiple policy targets and the clean energy supply potential. Further, completing a project offshore requires necessary interconnection networks to enable efficient integration with the onshore grid and respective power markets. As a result, streamlining siting and permitting processes for projects and thorough engagement with impacted coastal communities and stakeholders such as fishing, navigational, and maritime defense operations are essential to realizing the underlying law and policy objectives.[203]

The regulatory state, i.e., institutions and agencies of government, are often set up to reflect prevailing legal wisdom about fair and effective processes and when industrial developments require effective and pragmatic oversight. As mentioned above, rushing through permitting processes could harm legitimate rights and interests. At the same time, failure to complete projects at the right time and scale also has significant implications for the legitimate commercial interests of developers and energy policy goals of supplying reliable and cleaner energy to the grid in the mid- to long-term. There is a constant need to facilitate a more informed decision-making framework and robust assessment of issues raised by the stakeholders vis-à-vis project developers in ways that are not arbitrary and capricious.

The examined cases in the U.S.'s emerging offshore wind power industry show that projects could easily be delayed due to unresolved competing interests amongst stakeholders for over ten to fifteen years before actual electrons can be generated. Thus, finding ways to standardize and streamline the permitting processes and properly engage relevant stakeholders via a more comprehensive EIS at the initial stages of project planning rather than later on when there is more pressure and demand to complete the project or cancel it may be more proactive. To make the process more efficient, a compressive and standardized review of relevant Site Assessment Plans and the Construction and Operations Plan and proactive

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[201] Low Carbon Contracts Co., *Corporate Governance*, https://www.lowcarboncontracts.uk/corporate-governance (last visited Nov. 9, 2021).

[202] INT'L ENERGY AGENCY, *supra* note 152, at 141–42.

[203] BUREAU OF OCEAN ENERGY MGMT., *supra* note 41.

stakeholder engagement processes at an early or appropriate time during the permitting process are recommended. All parties need to clearly understand the opportunity costs of delayed and canceled projects. At the same time, the regulatory state plays a key role in gathering relevant information to address the possible misperception of risks and standardizing best practice measures for addressing common issues often identified from environmental reviews and impact assessment processes. Such standards and identified mitigation measures acceded to by all, or the majority of stakeholders, could help prevent costly and avoidable legal controversies. In the U.K., for instance, most engagement processes and reviews occur in the front end of the planning and permitting framework.

The need to consider the investment and infrastructural requirements for adding additional energy capacities from the emerging offshore industry in the medium- to long-term also implies the importance of coordination with the relevant RTOs/ISOs, state and local institutions, and grid managers. In the medium- to long-term, measures aiming to reduce capital and operating expenses, including the ability to secure financing and commercial interests throughout the permitting and review process, require keen attention.