STUCK IN LIMBO: CAN OFFSHORE WIND EVER BREAK FREE IN NEW ENGLAND AMID A MAZE OF REGULATORY AND POLITICAL CHALLENGES?

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INTRODUCTION

The Roman poet and philosopher Lucretius once wrote that "[a]ir, I should explain, becomes wind when it is agitated,"[1] and for over a thousand years mankind has tried to harness the "agitation" of which Lucretius spoke.[2] Initially, humans harnessed the power of the wind through windmills, which historical records indicate were used as early as 500-900 A.D. in Persia, and possibly China as well.[3] These early civilizations used the windmills for grain-grinding, water-pumping, and transportation.[4] The logic of putting to use a virtually unlimited (albeit intermittent) freely flowing source of energy was as obvious to these early civilizations as it is to modern ones.[5] More and more countries have explored and erected the contemporary version of the windmill: the wind turbine.[6] These large devices have the potential to provide every kilowatt of electricity that our planet presently uses and beyond.[7]

The benefits of using wind energy are both logical and profound. Fossil fuel prices have reached epic heights[8] and the oil market remains highly volatile.[9] Furthermore, the planet's fossil fuel reserves are principally in the possession of a number of countries that are either antagonistic toward the United States and its allies or are unreliable or undesirable allies themselves.[10] Thus, the United States is desperately seeking to achieve energy independence through domestic sources, such as wind.[11] Further, the vast majority of the world's scientific and political community agrees that anthropogenic climate change is a real and grave threat to the survival of

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1. LUCRETIUS, ON THE NATURE OF THINGS 196 (Martin Ferguson Smith trans., Hackett Publ'g Co. 2001) (c. 50 B.C.E.).

2. Mark Berry, *History of Windmills*, WINDMILL WORLD, https://perma.cc/J3NZ-LSU3 (last updated Jan. 27, 2016).

3. Darrell M. Dodge, *Part 1 - Early History Through 1875*, ILLUSTRATED HIST. WIND POWER DEV., https://perma.cc/L29P-53J9 (last visited Jan. 5, 2017).

4. Berry, *supra* note 2.

5. *See id.* (describing the rich history of windmills and how harnessing the wind as an energy source continues today).

6. *E.g.*, *Offshore*, DANISH WIND INDUSTRY ASS'N, https://perma.cc/UK3T-77JA (last visited Oct. 26, 2016) (describing Danish offshore wind farm development).

7. Xi Lu et al., *Global Potential for Wind-Generated Electricity*, 106 PROC. NAT'L ACAD. SCI. U.S. 10933, 10933 (2009).

8. *Oil Prices Surge to Record Heights Near $144*, PEAK OIL (June 30, 2008), https://perma.cc/UH6V-TAS9.

9. *What Drives Crude Oil Prices: Spot Prices*, U.S. ENERGY INFO. ADMIN., https://perma.cc/8AML-R27Q (last visited Oct. 27, 2016).

10. Andrew Higgins, *Oil's Swift Fall Raises Fortunes of U.S. Abroad*, N.Y. TIMES (Dec. 24, 2014), https://perma.cc/6VV9-BHSN.

11. *See Advancing American Energy*, WHITE HOUSE, https://perma.cc/K4CW-9D7J (last visited Jan. 5, 2016).

the planet's ecosystems and species.[12] Consequently, replacing traditional fossil fuels, or "dirty fuels,"[13] which allegedly emit carbon through burning and that the scientific community opines are responsible for anthropogenic climate change, with renewable sources is an essential step in combating climate-change concerns.[14]

Here in the United States, the drive to adopt wind energy has encountered larger hurdles and less enthusiasm than it has in Europe and elsewhere for a number of legal and political reasons.[15] American society's propensity to be far more litigious than many of our developed-world counterparts,[16] coupled with political gridlock on an unprecedented scale at the federal level in recent years, has stifled the growth of this industry.[17] While the onshore wind industry in the United States has seen arguable success, [18] the offshore wind industry—despite less intermittency, potentially fewer environmental concerns, and greater overall energy potential—has struggled and remains in limbo throughout most of the country.[19] These barriers leave America's potential untapped; the United States as a whole in 2014 used an estimated 3,764 gigawatt hours (GWh) of electricity,[20] yet possesses an estimated 4,150 gigawatts of offshore wind energy potential.[21]

This article examines the potential for—and regulatory and political challenges to—offshore wind energy in a specific region of the United States: New England. Part I examines the general advantages of renewable energy and offshore wind as opposed to onshore wind. Part II examines New England's offshore wind energy potential and the benefits that

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12. *Scientific Consensus: Earth's Climate Is Warming*, NAT'L AERONAUTICS & SPACE ADMIN., https://perma.cc/J5Y6-E494 (last updated Oct. 16, 2016) [hereinafter NASA].

13. Interview by Paul McRandle with Elizabeth Shope, Advocate, NRDC's Int'l Program, NRDC: Dirty Fuels, OnEarth (Feb. 16, 2011), https://perma.cc/CM4E-DUTH (defining dirty fuels).

14. WORKING GROUP III OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SPECIAL REPORT ON RENEWABLE ENERGY SOURCES AND CLIMATE CHANGE MITIGATION 7 (Ottmar Edenhofer et al. eds., 2012), https://perma.cc/937W-H85J.

15. Reuben Gregg Brewer, *Why the United States Is Moving Slowly on Renewable Energy, Explained in 2 Charts*, MOTLEY FOOL (Jan. 7, 2015, 4:00 PM), https://perma.cc/T6QH-HEH6.

16. Paul H. Rubin, *More Money into Bad Suits*, N.Y. TIMES, https://perma.cc/4Y98-ZAMD (last updated Nov. 16, 2010, 4:44 PM).

17. *See* Alex Garlick, *A Method to the Gridlock Madness*, U.S. NEWS (Dec. 2, 2014, 8:00 AM), https://perma.cc/FJL9-9T4S.

18. *US Wind 'Could Hit 400GW by 2050,'* RENEWS (Mar. 13, 2015), https://perma.cc/5S5R-WK8T.

19. Bobby Magill, *US Starts Playing Catch-Up on Offshore Wind*, AUSTRALIAN BUS. SPECTATOR (Jan. 29, 2015, 9:34 PM), https://perma.cc/9K5Z-3WH7?type=image.

20. *Connecticut: Table F21: Electricity Consumption Estimates, 2014*, U.S. ENERGY INFO. ADMIN., https://perma.cc/EPV9-WD6X (last visited Jan. 5, 2017) [hereinafter *2014 Electricity Consumption Estimates*].

21. MARC SCHWARTZ ET AL., ASSESSMENT OF OFFSHORE WIND RESOURCES FOR THE UNITED STATES 33 (2010).

harnessing this potential would bring to the region. Part III examines the regulatory process for offshore wind and the regulatory and political challenges that the offshore wind industry has faced thus far in New England. Part IV tells the tale of two case studies—Cape Wind, Massachusetts, and Statoil Hywind, Maine—to illustrate the challenges that New England offshore wind industry has and will continue to face. Finally, Part V of this article analyzes the future challenges to offshore wind in New England and reconciles these challenges with the benefits of offshore wind in New England by offering several solutions going forward. This articles concludes that robustly pursuing offshore wind in New England is in the best interests of the region and the United States as a whole.

I. ADVANTAGES OF RENEWABLE ENERGY AND OFFSHORE WIND

A. Advantages of Renewable Energy

Renewable energy is seen by many as the energy of the future,[22] with a multitude of critical advantages to traditional, fossil fuel sources of energy.[23] First, renewable energy is clean, as it does not emit greenhouse gasses.[24] Given the substantial body of scientists, scholars, politicians, and governments that fully embrace the argument that anthropogenic climate change is real and that the repercussions for not reducing greenhouse gas emissions could be catastrophic,[25] the move toward clean energy sources becomes more urgent and politically encouraged all the time.[26] Critics argue that the actual production and assembly of solar panels, wind turbines, etc., creates pollution and thus, calling renewable energy "clean" is an oxymoron.[27] However, this process still creates less pollution than harvesting hydrocarbons.[28] Eventually, the renewable-energy apparatus will

22. *E.g.*, Robert U. Ayres & Ed Ayers, *A Bridge to the Renewable Energy Future*, WORLDWATCH INST., https://perma.cc/EPV9-WD6X (last visited Jan. 5, 2017) (discussing pathways to renewable energy future).

23. John T. Williams, *Renewable Energy v. Fossil Fuel*, CHRON, https://perma.cc/F535-V8KH (last visited Jan. 5, 2017).

24. *Benefits of Renewable Energy Use*, UNION OF CONCERNED SCIENTISTS, https://perma.cc/J95Z-QYA6 (last visited Jan. 5, 2017).

25. Peter T. Doran & Maggie K. Zimmerman, *Examining the Scientific Consensus on Climate Change*, 90 EARTH & SPACE SCI. NEWS 22, 22–23 (2009); NASA, *supra* note 12; EXEC. OFFICE OF THE PRESIDENT, THE COST OF DELAYING ACTION TO STEM CLIMATE CHANGE 1–3 (2014).

26. *The World Should Urgently Invest in Renewable Energy*, CLEAN TECHNICA (Apr. 14, 2014), https://perma.cc/EPL4-4YUP.

27. Gabriel Toscana, *There Is No Such Thing as Clean Energy*, SOC. RESP. (Feb. 14, 2013), https://perma.cc/VVU2-AM5K.

28. *Wind Power: Clean, Sustainable, and Affordable*, UNION OF CONCERNED SCIENTISTS, https://perma.cc/LLK7-VGDW (last visited Jan. 5, 2017).

be manufactured with nontoxic, recyclable materials and powered by renewable energy itself, thus creating no pollution or waste.[29]

Second, renewable energy is predictable.[30] Notwithstanding the intermittency of renewable energy, which will become less of a problem as energy storage technologies continue to rapidly advance,[31] renewable energy has few, if any, negative economic externalities.[32] Hydrocarbons, on the other hand, have a number of externalities.[33] First, hydrocarbons are traded on international energy markets.[34] These markets fluctuate often and sometimes drastically, which can positively or negatively affect governments, private companies, and people alike.[35] Second, the market price of hydrocarbons on the energy market often does not reflect government subsidies, pollution, the threat of fuel exhaustion, and energy dependence that some countries can have on others.[36]

Third, renewable energy is theoretically unlimited.[37] The current estimates for solar power alone suggest that enough solar energy hits the planet in a single hour of the day to power all human civilization for an entire year.[38] Unless or until the sun stops shining or the moon ceases to exist, solar, wind, tidal, and other forms of renewable energy will theoretically continue to renew themselves an infinite amount of times, providing inexhaustible sources of energy.[39] Fossil fuels, on the other hand, are created by the anaerobic decomposition of dead organisms that takes millions of years to occur.[40] Thus, the eventual exhaustion of fossil fuels is

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29. David Roberts, *A Solar Future Isn't Just Likely—It's Inevitable*, VOX, https://perma.cc/6H3S-QU6V (last updated Apr. 28, 2015, 10:30 AM).

30. Richard Matthews, *Renewable's Predictable Pricing Trumps Volatile Oil*, GREEN MKT. ORACLE (Feb. 12, 2015), https://perma.cc/SJ6L-XG7K.

31. Sophie Vorrath, *Energy Storage Could Reach Big Breakthrough Price Within 5 Years*, CLEAN TECHNICA (Mar. 4, 2015), https://perma.cc/S6G3-YZH9.

32. *See* DAVID TIMMONS ET AL., THE ECONOMICS OF RENEWABLE ENERGY, GLOB. DEV. & ENV'T INST. (2014) (explaining that the negative externalities from renewable sources are significantly lower than externalities from coal).

33. *See generally The Hidden Cost of Fossil Fuels*, UNION OF CONCERNED SCIENTISTS, https://perma.cc/829P-A8D7 (last visited Jan. 5, 2017) (discussing the externalities of fossil fuels throughout the fuel cycle).

34. Patrick E. George, *How the Crude Oil Market Works*, HOWSTUFFWORKS, https://perma.cc/JX4K-RWVA (last visited Jan. 5, 2017).

35. *Id.*

36. *See generally The Hidden Costs of Fossil Fuels*, *supra* note 33 (noting significant health and economic costs not included in the price of fossil fuels).

37. Vivek Wadhwa, *The Coming Era of Unlimited—and Free—Clean Energy*, VENTUREBEAT (Sept. 21, 2014, 4:00 AM), https://perma.cc/YB2P-32EH.

38. Jeff Tsao et al., Solar FAQs 10 (Apr. 20, 2006) (unpublished working report), https://perma.cc/J536-M6T4.

39. Wadhwa, *supra* note 37.

40. *How Fossil Fuels Were Formed*, U.S. DEP'T OF ENERGY, https://perma.cc/P2WH-E5KL (last updated Feb. 12, 2013).

inevitable as humans are harvesting these fossil fuels in massive quantities every year, not every few million years.[41]

Fourth, within the near future—perhaps as few as five to ten years—the cost of renewable energy may be cheaper than that of fossil fuels in every major sector of the United States energy market: electricity, heating, and transportation.[42] In the electricity sector, solar and onshore wind are already close to what is known as grid parity—the point at which the cost per kilowatt-hour (kWh) of electricity generated by solar, wind, or other renewable sources is equal to that of electricity generated by fossil fuels.[43] While offshore wind is still a long way from grid parity, the possibility that projects may begin to actually achieve completion will drive costs down as the incentive to reduce the cost of offshore wind is created.[44] In the heating sector, an intense effort is being made to promote the adoption of energy efficient heat and hot water pumps,[45] thus eventually removing fossil fuels from the heating sector and lowering energy use through energy efficiency.[46] In the transportation sector, there is a vast financial push in the public[47] and private[48] sectors to reduce the cost of batteries.[49] This cost reduction would greatly reduce the cost of electric vehicles, making them cost-competitive if not cheaper than combustion-engine vehicles; thus, the adoption of electric vehicles would vastly expand[50] and eventually remove the oil industry's dominance of the transportation sector. Further, major United States corporations are adopting renewable energy for their energy

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41. *The End of Fossil Fuels*, ECOTRICITY, https://perma.cc/E6XP-6WZC (last visited Jan. 5, 2017).

42. *See* Tom Randall, *Fossil Fuels Just Lost the Race Against Renewables*, RENEWABLE ENERGY WORLD (Apr. 15, 2015), https://perma.cc/7RQ5-QCNS (noting that in energy markets throughout the world, the plummeting price of renewables will cause renewables to overtake fossil fuels).

43. *What Is Grid Parity?*, RENEWABLE ENERGY ADVISORS, https://perma.cc/4BG3-2QMH (last visited Jan. 5, 2017) (defining grid parity).

44. Michael W. Drunsic et al., *Can U.S. Offshore Clear Cost Reduction Hurdle?*, NORTH AM. WINDPOWER, https://perma.cc/FM5L-HS5K (last visited Jan. 5, 2017).

45. *See, e.g.*, *Heat Pump and Cooling System Rebates*, EFFICIENCY VT., https://perma.cc/7QTK-T9MW (last visited Dec. 3, 2016) (offering significant rebates for purchasing energy-efficient heat pumps in Vermont).

46. Steven Nadel, *Should We Promote Heat Pumps to Save Energy and Reduce Greenhouse Gas Emissions?*, AM. COUNCIL FOR AN ENERGY-EFFICIENT ECON. (May 4, 2016, 10:00 AM), https://perma.cc/T6Z3-3AVN.

47. *See generally* DAVID HOWELL, U.S. DEP'T OF ENERGY, OVERVIEW OF THE DOE ADVANCED BATTERY R&D PROGRAM (June 16, 2014), https://perma.cc/AB88-MUCM (presenting on the DOE's battery research and development program).

48. Lauren Sommer, *Silicon Valley in Race for Battery Breakthrough*, KQED SCI. (Nov. 1, 2013), https://perma.cc/2R2E-XCQE.

49. Christopher Martin, *The $5 Billion Race to Build a Better Battery*, BLOOMBERG MKTS., (Apr. 14, 2015, 12:01 AM), https://perma.cc/Q78U-XP3E.

50. Nikki Gordon-Bloomfield, *New Study Suggests Electric Car Battery Prices at Tipping Point for Mass-Production*, TRANSPORT EVOLVED (Apr. 14, 2015), https://perma.cc/Y496-C7H8.

needs, attracted by stable energy prices and the long-term cost savings associated with such transactions.[51] As this trend expands, renewable energy technologies, like with any market, will continue to drop in price as they are mass-produced and adopted, only hastening renewable energy's seemingly inevitable eclipse of fossil fuels.[52]

B. Advantages of Offshore Wind over Onshore Wind

The advantages of offshore wind over onshore wind are substantial. First, the winds offshore are typically stronger and less intermittent than onshore winds.[53] Although there are additional construction and maintenance costs to offshore wind turbines and farms,[54] these costs can be offset by the reduced intermittency, and thus, offshore wind has greater return than onshore wind.[55] For instance, the average capacity factor ("[t]he ratio of the net electricity generated, for the time considered, to the energy that could have been generated at continuous full-power operation during the same period") for onshore wind is 40.35%, whereas the average capacity factor for offshore wind is 43%.[56]

Second, more predictable offshore wind conditions reduce wind shear, which causes the wear and tear of turbine components.[57] The reduction in wind shear that offshore wind farms offer can extend the life of wind turbines from an estimated twenty to twenty-five years (typical for onshore turbines) to an estimated fifty years for offshore wind turbines.[58]

Third, offshore wind farms can be built near population centers without facing the problems commonly associated with close proximity to homes and other buildings that onshore wind farms face.[59] As "more than half of

51. David Labrador, *Why Corporate Power Purchasing Is Poised to Be the Next Big Thing in Renewable Energy*, CLEAN TECHNICA (Apr. 17, 2015), https://perma.cc/DL73-Q9FC.

52. *See Mass Production*, WILLAMETTE U., https://perma.cc/8P72-HZ8G (last visited Jan. 5, 2017) (describing how mass production lowers price).

53. Spenser Anderson, Comparing Offshore and Onshore Wind (April 30, 2013) (unpublished manuscript), https://perma.cc/PZ6W-FVQ8.

54. *Offshore Wind Energy*, OCEAN ENERGY COUNCIL, https://perma.cc/LN4D-5WBU (last visited Jan. 5, 2017).

55. *See ROI Twice as Great for Offshore Wind*, RENEWABLES INT'L (June 6, 2013), https://perma.cc/U9WD-DTTN (demonstrating research that shows that less variability in offshore wind reduces the cost).

56. Zachary Shahan, *Wind Turbine Net Capacity Factor—50% the New Normal?*, CLEAN TECHNICA (July 27, 2012), https://perma.cc/FV5Y-AV62?type=image.

57. HANS EJSING JØRGENSEN ET AL., EUR. WIND ENERGY ASS'N, INTRODUCTION TO OFFSHORE WIND RESOURCES 3 (2011).

58. Carolyn S. Kaplan, *Congress, the Courts, and the Army Corps: Siting the First Offshore Wind Farm in the United States*, 31 B.C. ENVTL. AFF. L. REV. 177, 191 (2004).

59. *See Why Offshore Wind*, FISHERMEN'S ENERGY, https://perma.cc/EJ7P-6E7L (last visited Oct. 22, 2016) (observing that offshore wind is beneficial because of its proximity to population centers).

the U.S. population" resides on the east and west coasts, this proximity to population centers is immensely important for the United States.[60]

Fourth, wind turbines that are situated far enough offshore are unlikely to provoke complaints regarding aesthetic concerns.[61] This may seem of lesser importance compared to the previous three factors, but ultimately it may be the most important factor of all. For example, the threat to aesthetics that Cape Wind presented to the residents of Cape Cod has been substantially responsible for the extreme legal paralysis that has afflicted the Cape Wind project from the beginning.[62] Deep-water offshore wind farms have the potential to create little to no aesthetic impact to the residents of the areas where they are built, minimizing the threat of a Cape Wind-style legal battle that paralyzes the project.[63]

II. NEW ENGLAND OFFSHORE WIND: POTENTIAL AND BENEFITS

New England comprises six states: Connecticut (CT), Maine (ME), Massachusetts (MA), New Hampshire (NH), Rhode Island (RI), and Vermont (VT).[64] Their aggregate population is 14,727,584,[65] and their aggregate land area is 62,685 square miles.[66] The region is known for its cold winters,[67] abundant rainfall,[68] mountains,[69] and for being rich in natural resources, such as timber[70] and fresh water.[71] Coastal New England has an aggregate population of 14,101,542,[72] an aggregate land area of 53,468 square miles,[73] and an aggregate coastline of 473 miles.[74]

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60. Kaplan, *supra* note 58, at 190.
61. *Id.* at 219.
62. Amanda Onion, *Wind Proposal Whips Up Controversy*, ABC NEWS (Oct. 29), https://perma.cc/2DMD-2YSB.
63. Kaplan, *supra* note 58, at 219.
64. *Visit New England*, https://perma.cc/2QVA-82HW (last visited Jan. 5, 2017).
65. *State & County QuickFacts*, U.S. CENSUS BUREAU, https://perma.cc/L2R2-QY2J (last visited Oct. 22, 2016).
66. *Land and Water Area of States, 2008*, INFOPLEASE, https://perma.cc/8LBN-R2DA (last visited Oct. 22, 2016) [hereinafter *Land and Water Area of States*].
67. Laura Geggel, *Why It's So Freakin' Cold: Here's the Science*, LIVE SCIENCE (Feb. 19, 2015, 4:50 PM), https://perma.cc/8NHU-HVC2.
68. *See Climate of Maine*, NAT'L CLIMATIC DATA CTR., https://perma.cc/PEE3-UD4E (last visited May 30, 2016) (discussing the abundance of rainfall in Maine specifically and New England broadly).
69. *Magnificent Mountains*, DISCOVER NEW ENGLAND, https://perma.cc/2K2U-Q433 (last visited Oct. 22, 2016).
70. Colin Nickerson, *New England Sees a Return of Forests, Wildlife*, BOS. GLOBE (August 31, 2013), https://perma.cc/MXT6-NZXW.
71. ENOSIS – THE ENVTL. OUTREACH GRP., GAUGING THE HEALTH OF NEW ENGLAND'S LAKES AND PONDS (Oct. 2010), https://perma.cc/UMC4-RZKD.
72. *State & County QuickFacts*, *supra* note 65.
73. *Land and Water Area of States*, *supra* note 66.

Despite being one of the richest regions in the United States for certain types of energy, such as biomass (timber),[75] New England is relatively unique in that it possesses not a single known barrel of oil, cubic foot of natural gas, or ton of coal; in other words, not a single known unit of fossil fuels.[76] Consequently, New England's electric rates are higher than the national average.[77] According to the Energy Information Administration (EIA), a division of the United States Department of Energy (DOE), while the February 2016 national Average Residential Retail Price of Electricity (ARRPE) was 12.15 cents per kWh,[78] coastal New England's February 2016 regional ARRPE was 19.49 cents per kWh,[79] breaking down per coastal state as follows:[80]

STATE	CT	ME	MA	NH	RI
ARRPE (cents/kWh)	20.68	17.83	19.78	18.37	18.78

These higher electric rates have only been exacerbated in the last few years as more residential, commercial, and industrial buildings—seizing on cheap natural gas prices from the hydraulic fracturing boom—have converted to natural gas as their primary source of heating and electricity; however, New England's natural gas infrastructure remains insufficient to meet the increasing demand, causing energy prices to spike.[81] These above-average electric and energy costs stifle economic growth in New England by creating an unfriendly environment for businesses not wanting to pay high energy costs.[82]

Notwithstanding New England's absence of fossil fuels, there is one energy source that New England has in abundance: offshore wind. The

74. *Coastline of the United States*, INFOPLEASE, https://perma.cc/C53Q-RUXA (last visited Jan. 5, 2017).

75. Scott Thistle, *New EPA Report Could Be a Boon to Maine Biomass Energy Producers*, BANGOR DAILY NEWS (Nov. 25, 2014, 11:36 AM), https://perma.cc/EY7K-9MXP.

76. Katharine Q. Seelye, *Even Before Long Winter Begins, Energy Bills Send Shivers in New England*, N.Y. TIMES (Dec. 13, 2014), https://perma.cc/5W34-FS4W.

77. *Id.*

78. *Electric Power Monthly*, U.S. ENERGY INFO. ADMIN. (Apr. 29, 2016), https://perma.cc/4EXH-4JZQ.

79. *Id.*

80. *Id.*

81. Sam Evans-Brown, *New England Electricity Prices Spike as Gas Pipelines Lag*, NAT'L PUB. RADIO (Nov. 5, 2014, 3:28 AM), https://perma.cc/NPE6-994J.

82. *See* Press Release, Conn. Dept. of Energy & Envtl. Prot., New England Governors Sign Energy Statement Committing Region to Cooperation on Infrastructure (Dec. 6, 2013), https://perma.cc/V2AC-NQVM (commenting on New England's higher energy costs due to "severe constraints on the flow of electricity and natural gas").

National Renewable Energy Laboratory (NREL), a national laboratory of the DOE,[83] has estimated that coastal New England possess as much as 362 aggregate gigawatts (GW) of potential wind energy,[84] or Estimated Technical Potential for Offshore Wind Power (ETPOWP), breaking down by state as follows:[85]

STATE	CT	ME	MA	NH	RI
ETPOWP (GW)	7	147	184	3	21

Meanwhile, according to the EIA, in 2014 New England had an aggregate regional annual electricity consumption (EC) of 114,413 megawatt hours (MWh), or 114.413 GWh (1,000 megawatts = 1 gigawatt), breaking down by state as follows:[86]

STATE	CT	ME	MA	NH	RI
EC (GW)	29.354	12.003	54.469	10.944	7.643

Thus, with an aggregate offshore wind energy potential of 362 gigawatts[87] (even taking into account an average capacity factor of 43%,[88] the energy potential would still equal 155.66 GW) and an aggregate electricity consumption for 2014 of 114.413 GWh,[89] New England's offshore wind energy potential—if fully harnessed—could supply every last KWh the region needs. Based on the 2014 EIA electricity consumption estimates, the NREL offshore wind energy potential estimates, and taking into account an average capacity factor of 43%, this creates 40.247 GW of surplus energy. This surplus should theoretically suffice to accommodate any increase in the electric needs of the region going forward, especially as energy efficient technologies are promoted and adopted throughout the

83. *National Renewable Energy Laboratory*, https://perma.cc/ZL56-LRMH (last visited Jan. 5, 2017).
84. ANTHONY LOPEZ ET AL., U.S. RENEWABLE ENERGY TECHNICAL POTENTIALS: A GIS-BASED ANALYSIS 15 (2012).
85. *Id.*
86. *2014 Electricity Consumption Estimates*, *supra* note 20.
87. LOPEZ ET AL., *supra* note 84.
88. Shahan, *supra* note 56.
89. *2014 Electricity Consumption Estimates*, *supra* at note 20.

region.[90] This surplus should also suffice to accommodate the electrification of the heating and transportation sectors of New England's energy use.[91]

Electrification is the conversion of a non-electric energy source to an electric energy source.[92] Examples include, converting oil or natural gas heat to electric heat or combustion-engine vehicles to electric vehicles.[93] Electrification of America's and New England's heating sector has already begun, with the federal government[94] and New England states, such as Maine[95] and Massachusetts,[96] pushing for the residential and commercial adoption of energy efficient heating and cooling pumps and hot water pumps. Electrification of America's transportation sector is seen as a vital step in ending United States imports of foreign oil and improving America's environment, and consequently mitigating, energy security and financial wellbeing.[97] The Edison Electric Institute postulated that "oil dependence, price volatility and cartels determining global oil prices may have cost the US economy up to $5.5 trillion since 1970" and that the "transportation sector accounts for 27% of US greenhouse gas emissions."[98]

In December of 2009, Maine's Ocean Energy Task Force (OETF) issued its Final Report to Maine Governor John E. Baldacci.[99] The Final Report stated that to fully electrify Maine's heating and transportation sectors, Maine's electricity use would increase between 3.8 and 5 GW per

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90. *Energy Efficiency Yields System-Wide Benefits in New England*, VT. ENERGY INV. CORP., https://perma.cc/56CC-BSVC (last visited Jan. 6, 2017); INT'L ENERGY AGENCY, ENERGY EFFICIENCY MARKET REPORT 2014, at 16 (2014), https://perma.cc/YX96-AUBS; INT'L ENERGY AGENCY, ENERGY EFFICIENCY MARKET REPORT 2014 FACTSHEET 1 (2014), https://perma.cc/5P4F-E5MM.

91. Christine Parrish, *Offshore Wind Power on Fast Track*, FREE PRESS (June 17, 2010, 5:33 AM), https://perma.cc/LSA7-JS7C.

92. *Electrify*, DICTIONARY.COM, https://perma.cc/7QA8-94TY (last visited Jan. 6, 2017).

93. *See generally* JUHA KIVILUOMA & GUSTAVO COLLANTES, ELECTRIFICATION OF ENERGY: WORKSHOP REPORT (2008), https://perma.cc/YFR8-WHHL (discussing the electrification of transport).

94. *See Heat Pump Systems*, U.S. DEP'T OF ENERGY, https://perma.cc/Y8TJ-RRRN (last visited Jan 6, 2017).

95. *High Efficiency Heat Pumps*, EFFICIENCY ME., https://perma.cc/U62U-8ZPR (last visited Jan. 6, 2017) (directing reader to federal programs that support heat pumps).

96. *Learn About Air-Source Heat Pumps*, MASS. CLEAN ENERGY CTR, https://perma.cc/VJ9S-HC8U (last visited Jan. 6, 2017).

97. Keith Johnson, *Electric Avenue: Or, How to Rev Up the Electric-Car Revolution*, WALL STREET J. (Nov. 16, 2009, 1:59 PM), https://perma.cc/3B69-UBVS; *see generally* ELECTRIFICATION COAL., ELECTRIFICATION ROADMAP: REVOLUTIONIZING TRANSPORTATION AND ACHIEVING ENERGY SECURITY (2009), https://perma.cc/H2HP-RWJ4 (discussing how electrification would reduce dependence on foreign fossil fuels).

98. EDISON ELEC. INST., TRANSPORTATION ELECTRIFICATION: UTILITY FLEETS LEADING THE CHARGE 32 (2014), https://perma.cc/T6GA-AQTZ.

99. OCEAN ENERGY TASK FORCE, FINAL REPORT OF THE OCEAN ENERGY TASK FORCE TO GOVERNOR JOHN E. BALDACCI (2009), https://perma.cc/T283-XXQF [hereinafter MAINE OCEAN ENERGY TASK FORCE REPORT].

year,[100] or a maximum of roughly 41.66% of Maine's 2014 annual electric consumption of 12.003 GWh. If this 41.66% maximum increase in electricity use was applied to all coastal New England states, then New England's aggregate 114.413 GWh of yearly use would increase by roughly 48.5 GW to 162.1 GW of annual electricity use. This amount would exceed New England's total wind energy potential of 155.66 GW by roughly 6.41 GW. This could easily be compensated for by other renewable energy sources, such as onshore wind, solar, and marine hydrokinetic.

These estimates are of course only hypothetical, academic, and subject to a multitude of variables. However, based on a comparison of the estimates by the NREL for New England's offshore wind energy potential,[101] the estimates by the EIA for New England's 2014 electricity use,[102] and the electrification estimates of the OETF[103] as applied to all New England states, New England's offshore wind energy potential should suffice to provide nearly all of the region's electrical use, including the region's increased electrical use if and when the region fully electrifies its heating and transportation sectors.[104] Thus, by fully electrifying New England's heating and transportation sectors and fully harnessing New England's offshore wind energy potential—supplemented slightly by other forms of renewable energy—New England could achieve total regional energy independence, powering itself 100% with carbon-free, domestic energy.[105] This would shield the region from the energy volatility that goes hand-in-hand with fossil fuels and reduce energy costs long term.[106]

III. REGULATORY AND POLITICAL CHALLENGES TO DATE

For all its vast potential in offshore wind, no other region has highlighted the challenges that face offshore wind like New England. These challenges can be primarily classified under two categories: (1) regulatory challenges and (2) political challenges. The regulatory and political challenges to offshore wind in New England revolve around a combination

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100. *Id.* at 9.

101. LOPEZ ET AL., *supra* note 84.

102. *2014 Electricity Consumption Estimates*, *supra* note 20.

103. MAINE OCEAN ENERGY TASK FORCE REPORT, *supra* note 99.

104. *See supra* Part II (calculating New England's capacity to supply its energy through offshore wind).

105. *See* Louis Bergeron, *The World Can Be Powered by Alternative Energy, Using Today's Technology, in 20-40 Years, Says Stanford Researcher Mark Z. Jacobson*, STAN. NEWS (Jan. 26, 2011), https://perma.cc/7KJT-Z6JJ (reporting that the whole world could be powered by renewable energy).

106. *See* JURGEN WEISS & MARK SARRO, THE BRATTLE GROUP, THE IMPORTANCE OF LONG-TERM CONTRACTING FOR FACILITATING RENEWABLE ENERGY PROJECT DEVELOPMENT 6 (2013), https://perma.cc/X7FR-UU6T (illustrating the benefits of renewable energy in a New York case study, including eliminating the volatility of fossil fuels).

of environmental concerns, the lack of cohesive federal and state regulatory processes for offshore wind, and political resistance to offshore wind. These challenges have bogged down offshore wind in New England in a series of lawsuits and discouraged investment in the region's offshore wind industry due to the lack of predictability and maze of regulatory procedures—both state and federal—that an offshore wind investor must navigate.

A. Regulatory Challenges

The regulatory challenges to offshore wind are vast and perhaps more debilitating to the promotion of offshore wind than the political challenges. Indeed, the legal and regulatory framework surrounding offshore wind and other forms of offshore energy are being referred to as a "vortex."[107] The regulatory scheme with regard to offshore wind energy has been described as a "patchwork quilt of federal, state and local agencies,"[108] with several agencies having jurisdiction over particular sectors of the offshore wind industry but no one agency having the authority to regulate the entire industry.[109] In fact, prior to 2005, it was not even clear whether any federal agency had the authority to approve the use of federal waters for offshore wind development.[110] Fortunately, this uncertainty was resolved by § 388 of the Energy Policy Act of 2005, which granted the Department of the Interior the authority over offshore wind leasing, easements, and rights-of-way for the development of "energy from sources other than oil and gas."[111] This Act also led to the creation of the Department of Interior's Minerals Management Service, which Secretary of the Interior, Ken Salazar, later trifurcated into the Office of Natural Resources Revenue, the Bureau of Safety and Environmental Enforcement (BSEE), and most importantly for offshore wind, the Bureau of Ocean Energy Management (BOEM).[112]

Prior to even commencing the regulatory process, there are initial hurdles that developers and investors have to take into account. First, there is a great deal of uncertainty among both developers and investors with regard to the permitting process.[113] The Departments of Interior and Energy have reported that the biggest challenges facing offshore wind development

107. John Moran, *Lighting Northern New England with Water: A Comparative Analysis of Wave and Tidal Hydrokinetic Energy Regulation*, 19 OCEAN & COASTAL L.J. 323, 328 (2014).

108. *Id.* at 333 (citing Ann E. Drobot, *Transitioning to a Sustainable Energy Economy: The Call for National Cooperative Watershed Planning*, 41 ENVTL. L. 707, 741 (2011)).

109. *Id.*

110. *Id.*

111. *Id.* at 333–34.

112. *The Reorganization of the Former MMS*, BUREAU OF OCEAN ENERGY MGMT., https://perma.cc/FZ3C-8S66 (last visited Oct. 27, 2016).

113. Ashlyn N. Mausolf, *Clearing the Regulatory Hurdles and Promoting Offshore Wind Development in Michigan*, 89 U. DET. MERCY L. REV. 223, 236 (2012).

are "the relatively high cost of energy, technical challenges," and that there are "permitting challenges related to the lack of experience with permitting processes for projects in both state and federal waters."[114]

Second, the long duration of offshore wind projects creates regulatory uncertainty and exposes the projects to substantial regulatory risks.[115] Changes in the electricity market, the enactment or expiration of tax credits, and the possibility of lawsuits can all challenge the regulatory process and create uncertainty that can deter investors and developers from undertaking such large and expensive projects.[116]

When it comes to the actual regulatory process before federal and state entities, the process can be categorized under two primary steps:[117] (1) the permitting and leasing of the offshore wind project with (a) the BOEM in federal waters, or (b) the state's regulatory agencies in state waters; and (2) additional scrutiny by a multitude of state or federal agencies pursuant to an extensive list of federal and/or state statutes and programs.[118]

1. The Offshore Wind Permitting and Leasing Process

The United States's federal waters consist of four primary jurisdictional zones: the federal territorial seas, the contiguous zone, the Exclusive Economic Zone (EEZ), and the Outer Continental Shelf (OCS).[119] As it pertains to offshore wind projects, the OCS is the relevant federal jurisdictional zone, and the OCS commences at three nautical miles from the coastline.[120] Therefore, any offshore wind projects that are located within three nautical miles from a state's coastline are under the sole jurisdiction of that state with regard to leasing and permitting, though the projects are still subject to federal statutes and regulations.[121]

The leasing and permitting process at the state level varies from state to state throughout New England.[122] In Maine, for instance, pursuant to An Act to Facilitate Testing and Demonstration of Renewable Ocean Energy

114. *Id.*
115. *Id.*
116. *Id.* at 251.
117. *See generally* JEFF THALER, PERMITTING AND LEASING FOR MAINE OFFSHORE WIND ENERGY PROJECTS: OFFSHORE WIND ENERGY PROJECT ROADMAP 2013 (2013) (explaining the various processes of gaining approval through the different steps in Maine through federal and state agencies).
118. Moran, *supra* note 107, at 328.
119. *Id.* at 330.
120. THALER, *supra* note 117, at 20.
121. *Id.* at 9.
122. *Regulatory Framework*, BUREAU OF OCEAN ENERGY MGMT., https://perma.cc/9SMF-YNTK (last visited Oct. 28, 2016).

Technology (LD 1465),[123] the first step is to apply to Maine's Department of Environmental Protection (DEP) to seek a general permit.[124] If a general permit is granted by the DEP and the "project is confined within the test site" then that is the only leasing and permitting step at the state level.[125] "However, if a cable is run from the energy device to shore, then a permit" pursuant to the Maine Natural Resources Protection Act is:

> required for dredging, soil replacement, bulldozing, filling, drilling, or construction or alteration to permanent structures in or on any protected natural resource or any land that is adjacent to and could be washed into a coastal wetland, pond, river, stream, brook, or "significant wildlife habitat" located in a freshwater wetland.[126]

Further, the state's utilities commission must approve electric contracts for the offshore wind project's produced energy.[127]

The leasing and permitting process at the federal level belongs exclusively to the BOEM, pursuant to § 388 of the Energy Policy Act of 2005.[128] The BOEM has promulgated a Fact Sheet addressing the "Wind Energy Commercial Leasing Process" (Leasing Process).[129] The Fact Sheet states:

> In 2009, President Barack Obama announced final regulations for the Outer Continental Shelf (OCS) Renewable Energy program, which was authorized by the Energy Policy Act of 2005 (EPAct). Department of Interior's Bureau of Ocean Energy Management is responsible for implementing these regulations, which provide a framework for issuing leases . . . that support production and transmission of renewable energy, including offshore wind . . . .[130]

The BOEM has established four phases in the Leasing Process: (1) Planning and Analysis; (2) Leasing; (3) Site Assessment; and (4)

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123. An Act to Facilitate Testing and Demonstration of Renewable Ocean Energy Technology, ch. 270, 2009 Me. Laws 799.

124. THALER, *supra* note 117, at 3.

125. *Id.* at 3–8.

126. *Id.* at 8.

127. Moran, *supra* note 107, at 342–53 (describing and comparing the various state regulatory structures in three different Northeastern states).

128. *Regulatory Framework*, *supra* note 122.

129. BUREAU OF OCEAN ENERGY MGMT., WIND ENERGY COMMERCIAL LEASING PROCESS (2015).

130. *Id.* at 1.

Construction and Operations.[131] In the Planning and Analysis phase, the BOEM seeks to identify suitable areas for wind energy leasing, conducts a variety of collaborations and communications with various interested and affected parties, and conducts environmental analysis and compliance reviews.[132] In the Leasing phase, the BOEM issues either a competitive or noncompetitive lease, both of which are exclusive, but the lease does "not grant the right to construct any facilities."[133] The BOEM must continue to approve any "lease area plans" before the lessee can proceed.[134] In the Site Assessment phase, the lessee must submit detailed plans for meteorological towers or buoys on the site, which must be approved, or approved with modifications, by the BOEM.[135] In the Construction and Operations Phase, the lessee submits detailed plans for the construction and operation of the wind energy project on the lease, and then the BOEM conducts environmental and technical reviews of the plans, which must be approved, or approved with modifications, by the BOEM.[136] Once all of these phases have been successfully completed, the BOEM can approve the project.[137] However, the Federal Energy Regulatory Commission (FERC) must approve electric contracts for the energy produced by the offshore wind project.[138]

2. Additional Federal and State Regulation

The permitting and leasing process is only the first step. Further complicating the process is the fact that, even if the state agencies or the BOEM approve the offshore lease, there are a multitude of additional federal and state agencies that have jurisdiction over some aspect of offshore wind permitting.[139] Federal agencies include: the Army Corps of Engineers (ACOE), FERC, the United States Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), the National Park Service, the Federal Aviation Administration, the Department of Defense, the United States Coast Guard, and the United States Environmental Protection Agency (EPA).[140] State agencies include: state environmental

131. *Id.*
132. *Id.* at 2.
133. *Id.*
134. *Id.*
135. *Id.*
136. *Id.*
137. *Id.* at 1.
138. Moran, *supra* note 107, at 337.
139. *See* THALER, *supra* note 117, at 18 (listing federal agencies that could require a "consistency review").
140. *See id.* at 9–16 (providing the statutory framework for various federal agencies to have authority over aspects of offshore wind permitting).

protection agencies, public utilities commissions, land-use agencies, and others.[141]

The various federal agencies exercise their regulatory authority pursuant to the following extensive list of federal statutes and programs: Rivers and Harbors Act (RHA) § 10 Permit;[142] Ports and Waterways Safety Act (PWSA) Private Aids to Navigation;[143] Federal Aviation Act (FAA);[144] Clean Water Act (CWA) § 404 Permit;[145] National Environmental Policy Act (NEPA);[146] Clean Air Act (CAA);[147] Endangered Species Act (ESA);[148] Migratory Bird Treaty Act (MBTA);[149] Marine Mammals Protection Act (MMPA);[150] Magnuson-Stevens Fishery Conservation Act (MSFCA);[151] and National Historic Preservation Act (NHPA) § 106.[152]

Pursuant to § 10 of the RHA, the ACOE is granted broad authority to regulate the construction of any structure that may obstruct any "navigable . . . waters of the United States."[153] Although Congress originally intended this authority to be directed toward rivers, canals, ports, and harbors,[154] § 10 of the RHA gives the ACOE the jurisdiction to regulate the construction of "power transmission line(s)" and "permanently floating vessel(s)," both of which are key components of the offshore wind industry and its development.[155]

Pursuant to the PWSA, the Coast Guard is tasked with ensuring "safe navigation through U.S. waters while protecting the marine environment."[156] The Coast Guard consults with the Secretary of the Interior and other federal and state authorities in order to examine the impact of offshore projects on navigation and may provide either a permit or a letter of no objection for the project.[157]

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141. *See id.* at 6 (providing a list of some of the agencies required by Maine's LD 1465).
142. *Id.* at 9–10.
143. *Id.* at 10.
144. *Id.*
145. *Id.* at 11.
146. *Id.* at 11–13.
147. *Id.* at 13.
148. *Id.* at 13–14.
149. *Id.* at 14–15.
150. *Id.* at 15.
151. *Id.*
152. *Id.* at 15–16.
153. 33 U.S.C. § 403 (2012).
154. Minnehaha Creek Watershed Dist. v. Hoffman, 449 F. Supp. 876, 884 (D. Minn. 1978) (noting that the "clear . . . intent and purpose of [the RHA] was to insure free navigability of interstate commerce through federal regulation of the subject waterbodies"), *rev'd in part on other grounds*, 597 F.2d 617 (8th Cir. 1979).
155. 33 C.F.R. § 322.2(b) (2009).
156. THALER, *supra* note 117, at 10.
157. 33 U.S.C. § 1223(c)(3)(B); THALER, *supra* note 117, at 10.

Pursuant to the FAA, the Federal Aviation Administration must consider the effects of offshore wind projects on airspace safety.[158] There are concerns about wind turbines interfering with radar and causing confusion for air traffic controllers.[159] The Federal Aviation Administration must also regulate, provide public notice, and may grant approval with regard to structures and obstructions that are over a certain height (200 feet is a structure requiring public notice, 499 feet is an obstruction) or built near an airport.[160]

Pursuant to § 404 of the CWA, the ACOE can authorize dredge-and-fill activities in waters of the United States.[161] The CWA is jointly administered by the ACOE and the EPA; however, the ACOE is the authoritative agency with regard to granting the kinds of dredge-and-fill permits that offshore wind project developers would need.[162] The ACOE must consult with other federal and state agencies to evaluate the effects of the proposed activity on the environment, culture, history, and other considerations.[163]

Pursuant to NEPA, federal agencies are obligated "to consider every significant aspect of the environmental impact of a proposed federal action," and to "ensure that the responsible agency will inform the public that it has indeed considered environmental concerns in its decision-making process."[164] Therefore, before any federal agencies—such as the ACOE—can issue permits to offshore wind projects, that agency must "take a hard look at the environmental consequences" of a proposed activity, a process that includes "undertaking a public interest review and consideration of alternatives."[165] A federal agency formalizes this analysis with an Environmental Assessment (EA), and if there is a finding of a significant environmental impact, then the agency must complete an Environmental Impact Statement (EIS).[166]

Pursuant to the CAA, the EPA must determine if a proposed project "could have an adverse impact on air quality."[167] For offshore wind projects, that generally translates to: Will the construction and decommission of the project adversely affect air quality?[168]

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158. THALER, *supra* note 117, at 10.
159. *Id.*
160. 14 C.F.R. § 77.5, 77.9 (2016); THALER, *supra* note 117, at 10.
161. 33 U.S.C. § 1344 (2012).
162. THALER, *supra* note 117, at 11.
163. *Id.*
164. Balt. Gas & Elec. Co. v. Nat. Res. Def. Council, Inc., 462 U.S. 87, 96 (1983).
165. Marvin C. Bynum II, Comment, *Testing the Waters: Assessing Wisconsin's Regulatory Climate for Offshore Wind*, 93 MARQ. L. REV. 1533, 1560 (2010) (internal quotations omitted).
166. THALER, *supra* note 117, at 12.
167. *Id.* at 13.
168. *Id.*

Pursuant to the ESA, a "taking" of an endangered or threatened species that is listed under the ESA is prohibited.[169] The FWS and the NMFS are the administering agencies for the ESA, and they must be consulted by other federal agencies and offshore wind project developers to ensure that the offshore wind project will not "jeopardize the continued existence of any endangered or threatened species . . . or adversely impact the species' habitat."[170] With offshore wind projects, the chief ESA concern is that the rotating turbine blades could harm or kill listed endangered or threatened species.[171]

Pursuant to the MBTA, it is illegal to engage in activities—such as offshore wind projects—that would result in the "taking" of listed migratory birds.[172] Like the ESA, the FWS administers the MBTA and must conduct an EA or EIS to determine if there is a risk of harming migratory birds with the offshore wind project.[173] With offshore wind projects, like with the ESA, the concern is that the rotating turbine blades could harm or kill listed migratory birds.[174]

Pursuant to the MMPA, the "taking" of marine mammals is prohibited unless permitted by law.[175] The FWS is also the administering agency for this statute and must conduct "analysis, mitigation, and monitoring measures" prior to authorizing any permits under this statute.[176] If it is found that a marine mammal could be harmed, the FWS can still authorize the project as long as the "taking" of the marine mammal is unintentional and limited to small numbers in a specific geographic region.[177]

Pursuant to the MSFCA, the NMFS, a division of the National Oceanic and Atmospheric Administration (NOAA), is the lead agency charged with assessing whether a proposed project would negatively impact the essential fish habitat (EFH) of "federally managed fish and invertebrate species."[178] The NMFS must be consulted for any offshore wind project in order to ensure that there will be no negative impacts to said fish and invertebrate species.[179] Further, "the parties in consultation are required to use the best

169. 50 C.F.R. §§ 17.3, 17.11 (2009).

170. 16 U.S.C. § 1536(a)(2) (2012); THALER, *supra* note 117, at 13 (citing 16 U.S.C. § 1536).

171. J.B. Ruhl, *Harmonizing Commercial Wind Power and the Endangered Species Act Through Administrative Reform*, 65 VAND. L. REV. 1769, 1770–71 (2012).

172. Migratory Bird Treaty Act, 16 U.S.C. §§ 703–712 (2012); 50 C.F.R. § 10.13.

173. THALER, *supra* note 117, at 14.

174. *See* CHARLES H. PETERSON, U. N.C. CHAPEL HILL, RISKS TO BIRDS AND WILDLIFE FROM OFFSHORE WIND FARMS: BOEMRE NC TASK FORCE 7 (2009), https://perma.cc/9HNX-AQCA (studying the ecological impacts of wind turbines, including the mortality risks to birds and bats).

175. *Id.*; 16 U.S.C. § 1371(a).

176. THALER, *supra* note 117, at 15.

177. *Id.*

178. 16 U.S.C. § 1855 (2012); THALER, *supra* note 117, at 15.

179. THALER, *supra* note 117, at 15.

available scientific information to mitigate the potential impacts on the EFH."[180]

Pursuant to § 106 of the NHPA, the construction of any offshore wind project "cannot be located on a historic property listed in the National Register of Historic places," as well as state, tribal, and other historic lists and lands.[181] The agencies to be consulted under NHPA are the National Park Service (NPS) and the applicable state or tribal agencies.[182] Additionally, the "visual effect on historic properties within the 'Area of Potential Effect' (APE) needs to be taken into consideration as well."[183]

Further, each of the New England states has its own environmental and regulatory statutes and regulations that must be met.[184] These environmental and regulatory processes proceed through the states' environmental agencies and utility commissions, are generally open to public comments and protests, and can often take a long time.[185] Additionally, as will be elaborated on under the political challenges section, the environmental or regulatory processes in the state agencies and commissions are potentially vulnerable to influence and interference by politicians, which can only further exacerbate the already difficult regulatory process for offshore wind in the states.[186]

B. Political Challenges

The United States has faced vast political challenges and obstacles to promoting offshore wind power on both the state and federal level. Despite the previously cited estimates by the NREL that the United States has as much as 4,150 GW of offshore wind potential,[187] the United States has not produced a single kWh of electricity from offshore wind to date.[188]

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180. 50 C.F.R. § 600.920(d) (2009).

181. THALER, *supra* note 117, at 15.

182. *Id.*

183. *Id.*

184. *See id.* (outlining the statutory and regulatory process for Maine); *Massachusetts Ocean Management Plan*, MASS.GOV, https://perma.cc/3RQW-4HVN (last visited Jan. 6, 2017); *Offshore Wind Energy*, R.I. OFF. OF ENERGY RES., https://perma.cc/H8FV-PJHD (last visited Dec. 3, 2016).

185. *See generally Massachusetts*, OFFSHORE WIND HUB, https://perma.cc/E8JF-Y5YT (last visited Dec. 3, 2016) (highlighting New England's regulatory statutes and regulations through examples from Rhode Island and Massachusetts).

186. *See* ENERGY & POLICY INST., ATTACKS ON RENEWABLE ENERGY STANDARDS AND NET METERING POLICIES BY FOSSIL FUEL INTERESTS & FRONT GROUPS 2013-2014, at 20, 22 (2014) (explaining that the House Energy and Environment Committee Chairman, Dennis Hedke, has ties to the fossil fuel industry and how Maine Governor, Paul LePage, has influenced the regulatory process).

187. SCHWARTZ ET AL., *supra* note 21.

188. Rachel March et al., *First Offshore Wind Farm in United States Begins Construction*, U.S. ENERGY INFO. ADMIN. (Apr. 14, 2015), https://perma.cc/4NYH-MEXV.

There are several key reasons for this lack of progress from a political perspective. First and foremost among these reasons is the nature of mineral ownership in the United States. In most countries around the world, ownership of mineral rights is held by the government—the state.[189] The United States is relatively unique in the sense that private landowners own the mineral rights beneath their land and are generally free to convey and lease these rights as they see fit.[190] The conflict that arises between private mineral ownership and wind power, as well as the other renewable energy sources, is one of economic competitiveness that does not exist in those countries where the government owns the mineral rights.[191] In the United States, the success of renewable energy is not in the economic interests of the fossil fuel industry because every kilowatt of electricity generated by renewable sources is a kilowatt less that American ratepayers need to purchase from the fossil fuel industry.[192] Private mineral ownership in the United States creates a zero-sum game in a sense, whereby it is economically damaging to the fossil fuel industry to see renewable energy succeed unless fossil fuel companies diversified into renewable fuels.[193] While a number of fossil fuel companies have experimented with renewable energy divisions, most have sold off those interests,[194] with only a few remaining.[195]

This competition spills into the political arena when oil, gas, and coal companies and corporations make large financial contributions to political candidates who deny climate change or favor the fossil fuel industry over the renewables industry. For instance, in the 2012 election, Koch Industries, a massive fossil fuel corporation run by brothers Charles G. and David H. Koch, contributed $412,670,666 to Republican candidates' campaigns, primarily candidates who supported the fossil fuel industry and did not

189. *Mineral Rights*, GEOLOGY.COM, https://perma.cc/3KYJ-VMFK (last visited Jan. 6, 2017).

190. *Id.*

191. *Id.*

192. *See* GABE ELSNER & MATT KASPER, ENERGY & POLICY INST., ATTACKS ON RENEWABLE ENERGY POLICY BY FOSSIL FUEL INTERESTS 2013-2014, at 3 (2014) (highlighting the risk of cheap clean energy to the fossil fuel industry).

193. *See id.* at 3–5 (detailing the fossil fuel industry's attempt to repeal or weaken renewable energy standards).

194. *See* Maria Gallucci, *Chevron Finalizes Sale of Its Clean Energy Subsidiary, Marking Latest Oil Industry Move Away from Renewables*, INT'L BUS. TIMES (Sept. 3, 2014, 10:54 AM), https://perma.cc/24WX-2H7B (citing Chevron's sale of its renewable energy subsidiary and scaling back of renewable investments by BP and Shell).

195. *See Wind Power*, STATOIL, https://perma.cc/79XU-HG3V (last visited Dec. 3, 2016) (emphasizing Statoil's renewable sector as one of the few among major fossil fuel companies).

support the renewables industry.[196] Koch Industries's contributions are the most extreme example of this political obstacle to wind and other renewable energies, but it has become a general trend on both the federal and state level, whereupon Republican candidates who have received large contributions from the fossil fuel industry tend to resist any efforts in Congress or state legislatures to promote renewable energy.[197] As previously stated, this dilemma does not exist in most countries, including European countries, where the government owns the mineral rights, and thus, there is no competing industry with wind and other renewable energies that would create the kind of political paralysis that has been seen in the United States.[198]

Second, political representatives and leaders often do not feel comfortable voting in favor of the high costs of wind power.[199] As previously stated, wind has not yet achieved total grid parity in the United States, which means that, in order to purchase electricity produced by wind turbines, ratepayers currently need to pay more for electricity produced by wind than they would for electricity produced by coal or natural gas.[200] Just as it is difficult for any politician to tell his or her constituents that he or she favors increasing taxes,[201] it is also difficult for any politician to tell his or her constituents that he or she favors building wind infrastructure that will increase the constituents' electric rates.[202] There is evidence that this concern is being alleviated, if not completely eliminated, with state utility companies discovering that wind power contracts actually produce substantial long-term savings for ratepayers.[203]

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196. Lee Fang, *The Koch Brothers Spent Twice as Much on the 2012 Election as the Top Ten Unions Combined*, THE NATION (Mar. 7, 2014), https://perma.cc/BX8W-3KHT; ELSNER & KASPER, *supra* note 192, at 20.

197. *See, e.g.*, ELSNER & KASPER, *supra* note 192, at 18, 20 (detailing how Koch Industries donates to anti-clean-energy organizations).

198. *See Mineral Rights*, *supra* note 189 (highlighting how most governments retain mineral rights instead of private citizens).

199. *See, e.g.*, Paul C. Barton, *Wind Blowing Against Alexander's Energy Arguments*, USA TODAY (Mar. 26, 2013, 9:11 PM), https://perma.cc/4CAG-N324 (reporting that a Tennessee Republican Senator has continually voted against a wind tax credit because it is "[a] huge waste of money").

200. *See* Drunsic, *supra* note 44 (emphasizing that one of the hurdles to renewable energy projects is cost reduction to the ratepayer).

201. *See* Todd Tinkelmeyer, *Campus Connection: Raising Taxes Political Suicide? Maybe Not*, MADISON.COM (May 21, 2010), https://perma.cc/5UUK-CVU3 (arguing that raising taxes for politicians is typically career suicide).

202. *See* James Taylor, *Electricity Prices Soaring in Top Wind Power States*, FORBES.COM (Oct. 17, 2014, 8:12 AM), https://perma.cc/2SKV-R8FJ (highlighting the high costs of wind power to taxpayers and associated job loss).

203. CHARLES RIVER ASSOCS., ANALYSIS OF THE IMPACT OF CAPE WIND ON NEW ENGLAND ENERGY PRICES 1 (Feb. 8, 2010) (finding that Cape Wind was estimated to reduce overall electricity prices in Massachusetts by an average of $185 million annually); Transcript of Direct Testimony at 11, Okla. Gas & Elec. Co., PUD 201100087 (Corp. Comm'n of Okla. July 28, 2011) (estimating, through direct testimony of Jesse B. Langston on behalf of Oklahoma Gas and Electric

IV. A TALE OF TWO PROJECTS—CAPE WIND, MASSACHUSETTS AND STATOIL HYWIND, MAINE—AND THE DAUNTING GLIMPSE THAT THEY GIVE INTO THE CHALLENGES FACING OFFSHORE WIND IN NEW ENGLAND

The legal and regulatory challenges to offshore wind in New England—and to an extent from a national perspective in the United States as well—are well-illustrated by the story of Cape Wind, an offshore wind project in Massachusetts. Environmental lawsuits, a maze of regulatory challenges, and the resistance of affluent and politically powerful property owners all created the perfect storm of resistance to hopelessly bog down what was supposed to be America's first offshore wind farm and the start of a new era in clean energy generation in the United States.

The political challenges to offshore wind in New England—and to an extent from a national perspective as well—are well-illustrated by a case study from Maine. This case study involved the Norwegian energy corporation's, Statoil's, history and plans for offshore wind in Maine, and the role and challenges that politics, particularly different political positions from different gubernatorial administrations—one Democrat, one Republican—can play on the development of offshore wind.

A. Cape Wind, Massachusetts

In November of 2001, Cape Wind Associates, under its President, Jim Gordon, first proposed the Cape Wind Energy Project (Cape Wind).[204] Cape Wind would be a 130-turbine wind farm off the coast of Cape Cod, Massachusetts.[205] Estimates from 2013 projected that the project would generate up to 420 megawatts of energy[206] and estimated that it would supply not only 10% of the electricity required in southeastern Massachusetts, but also 1% of the total projected electricity demand in all of New England.[207] Cape Wind was advertised as having the potential to prevent emissions of approximately 802 tons of sulfur dioxide, 497 tons of

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Company, that the wind energy fleet will save ratepayers a total of more than $1 billion over the lifespan of its wind energy facilities); BDN Editorial Bd., *LePage's Meddling in Energy Contracts Fits Dangerous Pattern*, BANGOR DAILY NEWS (Feb. 20, 2015), https://perma.cc/Y6YD-94HU ("In its Feb. 6 order, the PUC estimates the Weaver project will save ratepayers between $17 million and $39 million over the 25-year life of the contract. The total savings from Highland Wind was projected to be between $15 million and $34 million for the 20-year contract.").

204. *Cape Wind*, BUREAU OF OCEAN ENERGY MGMT., https://perma.cc/M48B-TZUY (last visited Dec. 3, 2016).

205. *Id.*

206. *Id.*

207. CHARLES RIVER ASSOCS., *supra* note 203, at 1.

nitrous oxide, and 733,876 tons of carbon dioxide.[208] Finally, studies indicated that Cape Wind had the potential to reduce overall electricity prices in Massachusetts by an average of $185 million annually.[209]

For Massachusetts, a left-leaning state, the economic advantages were only half of the equation, with the environmental benefits being the other half. Cape Wind was projected to achieve the aforementioned economic benefits without causing significant environmental harm.[210] The Department of the Interior prepared an EIS[211] and a Biological Assessment[212] for the project, and both studies concluded that the construction and operation of Cape Wind would have negligible impacts on wildlife in general and no significant impact on any species listed under the ESA.[213]

Ironically, despite the multitude of studies indicating that Cape Wind would bring substantial economic benefits to Massachusetts with negligible environmental impacts, many of the Massachusetts residents living on Cape Cod adamantly opposed the Cape Wind project from the beginning.[214] One of the primary difficulties was the fact that the project would extend over 24 square miles in Nantucket Sound,[215] which is either a permanent home or a summer home to many wealthy Americans, some of whom are very politically powerful, such as the Kennedy family.[216] Even Robert F. Kennedy, despite being a strong environmental advocate, has publicly opposed Cape Wind[217] and raised environmental and aesthetic concerns about the project that often seemed disingenuous given the environmental studies that concluded that the project would have negligible impacts.[218] However, the publicity raised by Kennedy and the Alliance to Protect

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208. Iva Ziza, *Siting of Renewable Energy Facilities and Adversarial Legalism: Lessons from Cape Cod*, 42 NEW ENG. L. REV. 591, 600 (2008).

209. CHARLES RIVER ASSOCS., *supra* note 203, at 1.

210. U.S. DEP'T OF THE INTERIOR, MINERALS MGMT. SERV., OCS PUB. NO. 2008-040, CAPE WIND ENERGY PROJECT: FINAL ENVIRONMENTAL IMPACT STATEMENT, at E-11 (2009) [hereinafter CAPE WIND FINAL EIS].

211. *Id.* at E-1.

212. U.S. DEP'T OF THE INTERIOR, MINERALS MGMT. SERV., CAPE WIND ENERGY PROJECT NANTUCKET SOUND: BIOLOGICAL ASSESSMENT 1-1 (May 2008) [hereinafter CAPE WIND BIOLOGICAL ASSESSMENT].

213. CAPE WIND ENERGY FINAL EIS, *supra* note 210, at E-11; CAPE WIND BIOLOGICAL ASSESSMENT, *supra* note 212, at 5-1–73.

214. *See generally Save Our Sound: Alliance to Protect Nantucket Sound*, SAVE OUR SOUND, https://perma.cc/GFK9-D9WM (last visited Dec. 3, 2016) (exemplifying the Save Our Sound opposition to Cape Wind).

215. Ziza, *supra* note 208, at 606.

216. Cassandra Love, *Case Study: Cape Wind Project*, NAT'L GEOGRAPHIC SOC'Y (Jan. 22, 2014), https://perma.cc/ETK9-KZDV.

217. Robert F. Kennedy, Jr., Opinion, *An Ill Wind off Cape Cod*, N.Y. TIMES (Dec. 16, 2005), https://perma.cc/SL8U-WPKE.

218. Love, *supra* note 216.

Nantucket Sound, the primary opposition group to Cape Wind, rallied opposition groups around environmental, aesthetic, and recreational concerns.[219] The Alliance to Protect Nantucket Sound—along with business opposition groups, Native American tribes, and Massachusetts's Governor, Mitt Romney—was responsible for filing a multitude of legal and regulatory challenges to Cape Wind, bogging the project down for years and greatly contributing to its potential demise.[220]

At the federal level, the ACOE was tasked with permitting Cape Wind and took roughly three years from the time the project was first proposed to complete an EIS pursuant to NEPA.[221] As many as 5,000 public comments were submitted on the ACOE's EIS, only to have the entire process rendered moot by the passage of the Energy Policy Act of 2005, which shifted jurisdiction for offshore wind permitting from the ACOE to the Department of the Interior.[222]

Much to the dismay of the Cape Wind developers, the Department of the Interior chose to conduct its own independent EIS—despite the already lengthy EIS process conducted by the ACOE—and took several more years to complete the process, only giving final federal approval to Cape Wind in April of 2010.[223] Following the federal approval of Cape Wind in April of 2010, events seemed to be in favor of the successful completion of the project. First, in October of 2010, the Department of the Interior granted a 28-year lease to Cape Wind.[224] Then in January of 2011, the ACOE and the EPA granted permits to Cape Wind.[225] Then in April of 2011 the Bureau of Ocean Energy Management, Regulation and Enforcement granted its necessary approval to the project.[226]

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219. *See generally Save Our Sound: Alliance to Protect Nantucket Sound*, *supra* note 214 (rallying opposition behind concerns about endangered species, economic impacts, and groundwater impacts).

220. *Id.*; James Quilter, *Timeline - The Nine-Year Saga of Cape Wind*, WIND POWER MONTHLY (Apr. 29, 2010), https://perma.cc/YY2L-X6LU; *see generally Litigation History of Cape Wind*, CAPEWIND.ORG (May 2, 2014), https://perma.cc/3G9A-PX8C (citing 32 cases filed by Cape Wind opponents).

221. Tom Zeller, Jr., *Cape Wind: Regulation, Litigation and the Struggle to Develop Offshore Wind Power in the U.S.*, HUFFINGTON POST (Mar. 1, 2013, 10:41 AM), https://perma.cc/A7L8-5FFX.

222. *Id.*

223. Quilter, *supra* note 220.

224. *Cape Wind*, *supra* note 204.

225. Katie Valentine, *The First American Offshore Wind Farm Could Be Up and Running by 2016, Cape Wind Says*, THINK PROGRESS (Feb. 27, 2014), https://perma.cc/5584-9WBV.

226. U.S. DEP'T OF THE INTERIOR, BUREAU OF OCEAN ENERGY MGMT., OFF. OF RENEWABLE ENERGY PROGRAMS, OCS EIS/EA BOEM 2014-668, PROPOSED REVISIONS TO THE CAPE WIND CONSTRUCTION AND OPERATIONS PLAN FOR OFFSHORE WIND POWER FACILITY IN NANTUCKET SOUND, OFFSHORE MASSACHUSETTS: ENVIRONMENTAL ASSESSMENT, at iii (2014).

At the state level, according to an article published by the Boston Globe, in order to move forward, Cape Wind needed the following state authorizations:

> Eight state and local permits, including a license and a water quality certification from the state DEP; highway access permits from the Massachusetts Highway Department; a license for a railway crossing from the Executive Office of Transportation; orders of conditions from the Yarmouth and Barnstable Conservation Commissions; and road opening permits from Yarmouth and Barnstable.[227]

Cape Wind successfully overcame one state hurdle after another over the long course of the years parallel to the federal permitting and regulatory process. Cape Wind overcame its first hurdle on May 11, 2005, when the Massachusetts Energy Facilities Siting Board approved Cape Wind's application to construct the project.[228] The decision was appealed to the Massachusetts Supreme Judicial Court, which affirmed the decision.[229] In March of 2007 the Massachusetts Secretary of Energy and Environmental Affairs granted approval for the project pursuant to the Massachusetts Environmental Policy Act (MEPA).[230] However, in October of 2007 the Cape Cod Commission declined to approve Cape Wind without additional studies on the impacts by the developers.[231] This decision was then overturned in May of 2009 when the Massachusetts Energy Facilities Siting Board issued what was called a "Super Permit" for Cape Wind, overriding the Cape Cod Commission's decision and eliminating the need for Cape Wind to obtain any additional state or local approvals.[232]

Most significantly on the state level, the Massachusetts Supreme Judicial Court weighed in on Cape Wind with two major decisions. First, the Supreme Court held on August 31, 2010, that the state had the power to overrule community opposition and grant a multitude of local permits to

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227. Stephanie Ebbert, *Cape Wind Seeks to Skip Permit Wars*, BOSTON.COM (Nov. 22, 2007), https://perma.cc/CF59-7Q6D.

228. Cape Wind Assos. at 2, EFSB 07-8 (Mass. Energy Facilities Siting Bd. May 27, 2009) (final decision), https://perma.cc/P3WZ-HXU9; All. to Protect Nantucket Sound, Inc. v. Dep't of Pub. Utils., 959 N.E.2d 413, 418–20 (Mass. 2011).

229. *All. to Protect Nantucket Sound*, 959 N.E.2d at 413.

230. Kenneth Kimmell, *The Cape Wind Offshore Wind Energy Project: A Case Study of the Difficult Transition to Renewable Energy*, 5 GOLDEN GATE UNIV. ENVTL. L.J. 197, 207 (2011).

231. Patrick Cassidy, *Cape Cod Commission Rejects Wind Farm*, SOUTH COAST TODAY (Oct. 19, 2007, 12:01 AM), https://perma.cc/4TRY-REW2.

232. Beth Daley, *SJC Ruling Gives Cape Wind Project Green Light to Build*, BOS. GLOBE (Sept. 1, 2010), https://perma.cc/HBH8-8JHF.

Cape Wind that the project needed to start construction.[233] Second, the Supreme Court held on December 28, 2011, that a novel power purchase agreement between Cape Wind and National Grid, one of Massachusetts's major utilities, was valid, and in so doing, the Supreme Court "unanimously rejected every argument advanced by critics."[234] Shortly thereafter, following the Massachusetts Supreme Judicial Court's approval of the National Grid Power Purchase Agreement, Cape Wind obtained approval by the Massachusetts Public Utilities Commission for its Power Purchase Agreement with NStar, another major utility in Massachusetts.[235]

By 2013, Cape Wind appeared poised to succeed at long last. The project had obtained federal and state approval, finalized Power Purchase Agreements, and its developers were in the final stages of securing financing and were expected to begin construction by the end of 2013.[236] On March 14, 2014, a federal district judge dismissed the 26th and perhaps final lawsuit against Cape Wind, stating that "there comes a point at which the right to litigate can become a vexatious abuse of the democratic process."[237] But, then it all fell apart.

On January 7, 2015, National Grid and Northeast Utilities, which had merged and acquired NStar, terminated their contracts with Cape Wind, claiming that the developers had failed to meet the December 31, 2014, deadline contained in the 2012 Power Purchase Agreements to obtain financing and commence construction.[238] The contract termination was seen as a potential death-blow to the $2.5 billion Cape Wind project and was swiftly followed by more bad news. On March 3, 2015, a $4.5 million deal between Massachusetts and Cape Wind to use a terminal in New Bedford, Massachusetts as a staging and construction site was mutually terminated.[239] Finally, in what was seen as perhaps the most symbolic act since the Power Purchase Agreement terminations, Mark Rodgers, Cape

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233. *See Litigation History of Cape Wind*, *supra* note 220 (citing the Massachusetts Supreme Judicial Court opinion upholding the Energy Facilities Siting Board's authority to grant a permit for Cape Wind).

234. Carolyn Y. Johnson & John R. Ellement, *Cape Wind Buoyed as SJC Allows Utility Deal*, BOS. GLOBE (Dec. 28, 2011), https://perma.cc/PL3K-BXUL; *see also All. to Protect Nantucket Sound*, 959 N.E.2d at 418–20 (Mass. 2011) (elaborating on the Massachusetts Supreme Court's decision).

235. *Massachusetts Approves Cape Wind / NSTAR Power Purchase Agreement*, CAPE WIND (Nov. 26, 2012, 4:18 PM), https://perma.cc/G4WP-PTUC.

236. Alex Gullen, *Offshore Wind Power Set to Sail*, POLITICO (June 28, 2013, 12:06 AM), https://perma.cc/9YWF-6SVU.

237. *Federal Judge Dismisses Lawsuit Against Cape Wind*, CAPE WIND (May 3, 2014, 2:53 PM), https://perma.cc/5RQ2-F8YS.

238. Jim O'Sullivan, *Two Utilities Opt Out of Cape Wind*, BOS. GLOBE (Jan. 6, 2015), https://perma.cc/Q6HH-J3KG.

239. *Cape Wind Lease for New Bedford Terminal Ended*, READING EAGLE (Mar. 3, 2015, 11:02 AM), https://perma.cc/H6MJ-UDYJ.

Wind communications director for more than 13 years, resigned on March 12, 2015.[240] Rodgers's resignation was argued by some as a clear indication that even those most invested in the project had come to realize that Cape Wind could not and would not succeed.[241]

Despite these seemingly calamitous events, there may still be hope for Cape Wind. Whether any attempt to revive Cape Wind is successful remains to be seen, but there are some hopeful signs. On January 16, 2015, Massachusetts Representative, Patricia Haddad, submitted a bill to the Massachusetts Legislature that would mandate that utilities buy electricity from offshore wind sources.[242] Meanwhile, Cape Wind's President, Jim Gordon, is among several individuals working toward creating a coalition to promote offshore wind, including the formation of a trade group called Offshore Wind Massachusetts.[243] Environmental groups and local residents have also been rallying and pushing to save Cape Wind, arguing strongly for the use of renewable energy sources to reduce fossil fuel dependency.[244]

Cape Wind's ultimate fate remains to be seen but much will depend on the political climate in the country, as articulated in other sections of this article. However, at the very least, Cape Wind served as a scapegoat, alerting other offshore wind developers of the risks and challenges faced and allowing them to plan ahead on how best to avoid the terrible process that Cape Wind has endured.

B. Statoil Hywind, Maine

John E. Baldacci, Democratic Governor of Maine from 2003 to 2011, made it a key policy goal of his administration to use the State of Maine's vast offshore wind resources, with his administration aggressively pushing for the Maine Wind Energy Act of 2008.[245] Baldacci's goal was to counterbalance a number of Maine's weaknesses—a relatively small and poor economy and no indigenous fossil fuels—by harnessing Maine's offshore wind as an indigenous energy source that could invite billions of dollars of investment into the state, create thousands of jobs, and eventually

240. *Cape Wind Stalwart Calls It a Day*, RENEWS (Mar. 16, 2015), https://perma.cc/UK3H-4LCW.

241. *Cape Wind Spokesman Resigns from Wind-Farm Project*, TRADE ONLY TODAY (Mar. 16, 2015), https://perma.cc/U8KH-DSUG.

242. Richard A. Kessler, *Massachusetts Bill Mandates Utilities Buy Offshore Wind Power*, RECHARGE (Jan. 23, 2015), https://perma.cc/46SV-KBVD; H.R. 3217, 189th Gen. Ct., 1st Sess. (Mass. 2015).

243. Gintautas Dumcius, *Cape Wind's Jim Gordon Calls State Energy Legislation "Very Promising,"* CAPE COD TODAY (Feb. 26, 2015, 06:00 AM), https://perma.cc/7E44-YLB5.

244. Sabine von Mering, *Letter from Wayland Resident: Cape Wind Rally*, NEEDHAM (Feb. 26, 2015, 2:01 AM), https://perma.cc/7JTM-JLS8.

245. ME. REV. STAT. ANN. tit. 35-A, § 3402 (2014).

achieve energy independence for Maine and New England, all while reducing carbon emissions and protecting Maine's environment.[246]

The primary architect of Baldacci's plan for the future of Maine's offshore wind industry was Habib Dagher, a professor and the director of Advanced Structures and Composite Center at the University of Maine.[247] Dagher's initial plan was for a 20-year, 20-billion dollar investment into Maine's offshore wind industry that would construct and install enough wind turbines to provide five gigawatts of electricity, or nearly half of what Maine uses on a yearly basis.[248] However, Dagher has made it clear that the ultimate goal for the future is to harness all 150 estimated gigawatts of wind energy potential that the Gulf of Maine has to offer.[249] In order to facilitate the exploration and utilization of Maine's offshore wind industry, a partnership called Maine Aqua Ventus (Aqua Ventus) was formed between the University of Maine, construction company Cianbro, and energy/utility provider Emera.[250]

Maine's first attempt to create an offshore wind industry revolved around a partnership with Oregon-based Principle Power in 2008.[251] However, Principle Power abandoned its plans to work with Aqua Ventus two years later in 2010, claiming that Maine had parochial politics and that the University of Maine set unreasonable conditions.[252] The University denied these claims, yet Principle Power took their technology and investment to Portugal instead.[253]

In June of 2009, Baldacci, Dagher, other members of Aqua Ventus, and Maine's Congressional Delegation traveled to Washington, D.C. to meet with DOE Secretary Dr. Steven Chu to discuss Maine's offshore wind potential.[254] During that meeting, Secretary Chu advised that Baldacci and the Aqua Ventus team should travel to Norway to view first-hand the world's first deep-water offshore wind turbine that had only just been installed by the Norwegian energy corporation, Statoil.[255]

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246. Ramona du Houx, *Gov. John Baldacci: Maine's Energy Future*, MAINE INSIGHTS (Jan. 3, 2010), https://perma.cc/988H-U7WF.

247. White Richardson, *UMaine's Offshore Wind Energy Pilot Project Wins Initial OK*, BANGOR DAILY NEWS (Jan. 4, 2015, 2:14 PM), https://perma.cc/B6B7-5G63.

248. Nok-Noi Ricker, *Offshore Wind Farm Developers Visit Brewer*, BANGOR DAILY NEWS (Nov. 17, 2009 9:45 PM), https://perma.cc/8Y62-K57D.

249. Richardson, *supra* note 247.

250. *The Project*, AQUA VENTUS ME., https://perma.cc/72LM-PNYN (last visited Jan. 6, 2017).

251. Tux Turkel, *Answers Sought on Why Maine Lost out on Key Grant for Offshore Wind Project*, PORTLAND PRESS HERALD (May 14, 2014), https://perma.cc/CSH2-RKHP.

252. *Id.* at 3.

253. *Id.*

254. Ramona du Houx, *Energy Secretary Chu – Impressed with Maine's Research and Development Projects*, MAINE INSIGHTS (June 26, 2010), https://perma.cc/6ELE-Z28H.

255. *Id.*

Statoil is a Norwegian, multinational oil and gas company headquartered in Stavenger, Norway.[256] Statoil's net income for the last three years was NOK 37.6 billion in 2010, NOK 78.4 billion in 2011, and NOK 69.5 billion in 2012.[257] Statoil is among several hydrocarbon-oriented energy companies that have launched renewable energy divisions in order to acquire a market-share of what is undoubtedly a major future sector of energy, if not the major future sector.[258] Statoil's Wind Power Division focuses on offshore wind, with Statoil constructing and installing the first floating offshore wind turbine in the world on June 6, 2009.[259] At the writing of this article, Statoil now has five offshore wind farms, all of which are located in Norway and the United Kingdom.[260]

In September of 2009, Governor Baldacci, Habib Dagher, staffers of Maine's Congressional Delegation, and academic and business members of the Aqua Ventus partnership traveled to Europe on an international offshore wind exploratory venture.[261] The Maine Delegation visited Spain, Germany, and finally Norway.[262] On September 25, 2009, in Norway, Statoil took the Maine Delegation to view the Hywind Demo, Statoil's 2.3 megawatt deep-water offshore wind turbine—the first of its kind.[263] The Maine Delegation and Statoil formalized their desire to forge an alliance on offshore wind by signing a Letter of Intent to do business together.[264]

Then, on November 17, 2009, Statoil sent three members of its Wind Power Division to Maine to observe Maine's infrastructure and capacity with regard to offshore wind potential.[265] Representing Statoil were Knut Aanstad, head of business development for Wind Power; Sjur Bratland, asset manager for Hywind; and Knut Erik Steen, technical manager for Hywind. [266] The Statoil representatives toured Cianbro Eastern Manufacturing Facility in Brewer, the Fox Islands Community Wind Project in Vinalhaven, the Brunswick Naval Air Station, and Bath Iron Works.[267]

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256. *Annual Report 2012*, STATOIL, https://perma.cc/Z62L-FY79 (last visited Nov. 10, 2016).

257. *Id.*

258. *Id.*

259. Prachi Patel, *Floating Wind Turbines to Be Tested*, IEEE SPECTRUM (Jun. 22, 2009, 4:00 PM), https://perma.cc/8LBQ-WRBK.

260. *Annual Report 2012*, *supra* note 256.

261. Associated Press, *Gov. Baldacci to Lead Trade Mission*, BANGOR DAILY NEWS (Sept. 17, 2009, 10:59 AM), https://perma.cc/7ZS8-4X8T.

262. *Id.*

263. *Governor Highlights Maine as Premier Location for Wind Power Investments*, VOTE SMART (Nov. 17, 2009), https://perma.cc/4EZG-YZDV.

264. *Id.*

265. *Id.*

266. *Id.*

267. *Id.*

Impressed by Maine's infrastructure and potential as an offshore wind partner, Statoil entered into contract negotiations with Maine to build, as a start, a $120 million Hywind Maine project.[268] The planned project was for four, 3-megawatt wind turbines placed 12 miles out to sea near Boothbay Harbor.[269] In 2009 and 2010, the Maine Legislature enacted legislation that authorized the Maine Public Utilities Commission to conduct a competitive bid process for long-term offshore wind development.[270] Statoil won the bid and the contract negotiations with Maine officials lasted several years and culminated on January 24, 2013, with the Maine Public Utilities Commission granting Statoil's Term Sheet for the contract.[271] Maine appeared poised to become a hub of offshore wind in the United States,[272] with the financial backing of a multibillion dollar international energy corporation with years of deep-water offshore wind experience and "sufficient offshore wind energy potential in the Gulf of Maine to power the entire state of Maine."[273] But, then it all fell apart.

On November 2, 2010, Republican Paul LePage won the election for Maine Governor with 37.6% of the vote in a five-way race.[274] LePage is considered the most conservative governor in Maine's history and the most conservative governor of any state currently in office.[275] LePage's contempt for renewable energy is well known, with LePage even telling the Skowhegan Area Chamber of Commerce that the University of Maine at Presque Isle's award-winning campus wind turbine has an "electric motor" that the University turns on whenever visitors come to the University so that the University "can show people wind power works"; this claim was categorically denied by the University.[276]

Assuming office on January 5, 2011, LePage was a polar opposite[277] to John Baldacci on wind energy.[278] LePage, who had made reducing Maine's

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268. Tux Turkel, *Pioneering Maine Wind Project Passes 'Biggest Hurdle,'* PORTLAND PRESS HERALD (Jan. 24, 2013), https://perma.cc/23S9-ZNKJ.

269. *Id.*

270. ME. PUB. UTIL COMM'N, DOCKET NO. 2010-00235, ORDER APPROVING TERM SHEET (2013); ME. REV. STAT. ANN. tit. 12, § 1868 (2014).

271. Turkel, *supra* note 268.

272. *Id.*

273. Andy O'Brien, *UMaine Offshore Wind Developers Envision a Wind-Driven Economy*, FREE PRESS (Jan. 30, 2014, 5:21 AM), https://perma.cc/5TRT-7G5U; Turkel, *supra* note 268.

274. *Maine Governor – LePage vs. Mitchell vs. Cutler*, REAL CLEAR POLITICS, https://perma.cc/3TX4-AU6Q (last visited Dec. 3, 2016).

275. Howie Carr, *Maine Gov. Paul LePage Tells Howie Carr He's Most Conservative Chief Executive*, BREITBART (Jan. 12, 2015), https://perma.cc/TP77-JCPK.

276. Mike Tipping, *LePage Spins Windmill Conspiracy Theory*, TIPPING POINT (Apr. 18, 2013), https://perma.cc/LQ3S-MYQL.

277. *Compare* Houx, *supra* note 251 (showing Governor John Baldacci's support for Maine's off-shore wind development and partnership with Statoil), *with* Kevin Miller, *LePage's Critical Wind-Power Stance Creating Uncertainty*, BANGOR DAILY NEWS (May 27, 2012, 5:06 PM),

above-average electric rates a top priority for his administration, publicly criticized the Maine Public Utilities Commission's decision to approve Statoil's Term Sheet in his 2013 State of the State speech.[279] The following year, LePage threatened to veto a highly-popular and bipartisan omnibus energy bill, LD 1559, that was on the verge of passing in the Maine Legislature unless a provision was added to a separate bill, LD 1472, which would reopen the bidding process for the wind energy project that the Maine Public Utilities Commission had awarded to Statoil in January of 2013 to allow Maine Aqua Ventus to submit a competing bid.[280] Both chambers of the Maine Legislature were controlled by the Democratic Party at the time, but the Democrats held only simple majorities, not veto-overriding super-majorities in the chambers.[281] Nevertheless, the Maine House marshalled the votes of enough Republican House members to override LePage's veto.[282] However, when it came to a vote in the Maine Senate, there were insufficient votes to override LePage's veto.[283] Upon the passage of LD 1472, Statoil wrote a letter to the Maine Public Utilities Commission expressing its concerns about the now-uncertain fate of its contract with the Maine Public Utilities Commission, which Statoil had expected to be finalized by the summer of 2013, and announcing that it put the Hywind Maine project on hold.[284]

Then came the straw that broke the camel's back. On August 30, 2014, Maine Aqua Ventus, which previously worked as a partner with Statoil until the two entities went their separate ways and became competitors for a federal offshore wind grant, seized the opportunity presented by LD 1472 and submitted a bid for the Maine Public Utility Commission's offshore

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https://perma.cc/H475-HNG9 (explaining that since LePage's election he has questioned and disagreed with the State's policies designed to encourage development of wind power).

278. Kevin Miller, *LePage Sworn in as Governor: 'Four Years and a Job to do*,*'* BANGOR DAILY NEWS (Jan. 5, 2011, 10:54 AM), https://perma.cc/NS9E-BYST.

279. *See also Maine Blows It with Statoil. Hopefully Entire Offshore Wind Industry Isn't Next*, BANGOR DAILY NEWS (Oct. 17, 2013, 2:26 PM), https://perma.cc/XJ9G-776P (explaining that the governor worked against the plan privately and spoke against it in public); Paul LePage, Me. Governor, 2013 State of the State Address as Prepared (Feb. 5, 2013), https://perma.cc/5SWH-5JL6.

280. Matthew Stone, *LePage Wants Support for UMaine Offshore Wind Project, Not Statoil's, Before He Backs Energy Bill*, BANGOR DAILY NEWS (June 4, 2013, 6:12 PM), https://perma.cc/7GN7-A9ZB; H.R. 1053, 126th Leg., 1st Sess. (Me. 2013); H.R. 1128, 126th Leg., 1st Sess. (Me. 2013).

281. *2013 Legislative Scorecard*, ME. PEOPLE'S ALLIANCE, https://perma.cc/SN6A-3FR3 (last visited Oct. 27, 2016).

282. Tom Bell, *Senate Overrides LePage's Energy Bill Veto*, NAT. RESOURCES COUNCIL ME. (June 23, 2013), https://perma.cc/9RL5-QK8N.

283. *Id.*

284. Letter from Lars Johannes Nordli, Vice President, Statoil, to Harry Lanphear, Admin. Dir., Me. Pub. Utils. Comm'n, https://perma.cc/2L2P-6DFW; Sue Mello, *Statoil Wind Project on Hold*, BOOTHBAY REGISTER (July 5, 2013, 11:30 AM), https://perma.cc/VUU9-GC6L.

wind contract.[285] Shortly thereafter on October 15, 2013, Statoil announced that, as a result of the political uncertainty stemming from the passage of LD 1472, it would withdraw its operations from Maine.[286] Four years after first signing the Letter of Intent with Governor Baldacci, the alliance with Statoil—and all of the hopes and potential that the alliance seemed to promise—was at an end.

In the aftermath of Statoil's departure, a flurry of political and media activity ensued. Many blamed Governor LePage for Statoil's withdrawal, with critics ranging from the Sierra Club to LePage's 2014 gubernatorial opponents, Democrat Mike Michaud and Independent Eliot Cutler.[287] Democrat Justin Alfond, then Maine Senate President, wrote an editorial in the Portland Press Herald, criticizing LePage and the Maine Republicans' efforts regarding LD 1472 and Statoil.[288] Alfond argued that the true and devastating loss of Statoil's departure was not necessarily the loss of the wind energy investment—though that loss was potentially grave—but the reputation that Maine made for itself with the international business community: a reputation that a deal is not a deal and a handshake is not a handshake in Maine.[289] Alfond pointed out that Maine's wind-energy resources are vast and that exploiting them is highly popular among the vast majority of Mainers.[290] Thus, whether LePage or anyone else agreed, from a political perspective, with the investment into wind energy, it remains an important domestic source of energy for Maine and a great opportunity was lost, possibly for good.[291] Republican Michael Thibodeau, the Maine Senate Minority Leader, responded to Alfond's editorial with one of his own several months later after Aqua Ventus had been approved by the Maine Public Utilities Commission for the offshore wind project.[292] Thibodeau countered Alfond by arguing that Aqua Ventus's project would cost Maine ratepayers less than Statoil's project would have, create more Maine jobs than Statoil's would have, and ensure that a greater percentage of the

285. Nick McCrea, *UMaine Submits Bid for Floating Turbine Deal*, BANGOR DAILY NEWS (Sept. 3, 2013, 5:04 PM), https://perma.cc/B22A-CRAD.

286. Whit Richardson, *Statoil to Quit Work on $120 Million Offshore Wind Project in Maine*, BANGOR DAILY NEWS (Oct. 15, 2013), https://perma.cc/V2XV-KXAY.

287. Christopher Cousins, *Political Foes Blast LePage for His Role in Statoil Departure from Maine; Supporters Say It Clears Way for UMaine Project*, BANGOR DAILY NEWS (Oct. 28, 2016, 12:17 AM), https://perma.cc/FN2Q-H3BJ.

288. Justin Alfond, Opinion, *Killing of Statoil Project for Political Reasons Hurt Maine and Its Workers*, PORTLAND PRESS HERALD (Oct. 29, 2016), https://perma.cc/2F46-DYNW.

289. *Id.*

290. *Id.*

291. *Id.*

292. Michael Thibodeau, Opinion, *Public Utilities Commission Decision Proves Senate Republicans Were Right About Offshore Wind Project*, BANGOR DAILY NEWS (Jan. 15, 2014, 10:33 AM), https://perma.cc/5JYH-BP4V.

offshore wind investment went directly to Maine companies than Statoil's would have.[293]

Only salting the wound of Statoil's departure was the decision by the DOE on May 7, 2014—not even seven months after Statoil's departure—not to select Maine Aqua Ventus for a highly-coveted $47 million dollar federal grant in the Offshore Wind Advance Technology Demonstration Projects competition.[294] Six projects competed for the grant: (1) Baryonyx Corporation in Port Isabel, Texas; (2) Dominion Virginia Power in Virginia Beach, Virginia; (3) Fishermen's Energy Atlantic City Windfarm in Atlantic City, New Jersey; (4) Lake Erie Energy Development Corporation in Cleveland, Ohio; (5) Maine Aqua Ventus in Monhegan Island, Maine; and (6) Principle Power in Coos Bay, Oregon.[295] Fishermen's Energy, Dominion Power, and Principle Power, the very same entity that had abandoned its plans in 2010 to work with Aqua Ventus in Maine, were the three winners of the grants, while Baryonyx, Lake Erie, and Aqua Ventus were the losers.[296] Principle Power was viewed as Aqua Ventus's primary competitor.[297] Although the DOE officially stated that the reason for passing over Aqua Ventus was because Principle Power had credibly demonstrated that its floating-turbine design was less expensive than Aqua Ventus's, many in the industry wondered if what had happened with Statoil did not affect the decision behind the scenes.[298]

With Statoil's departure and the collapse of Aqua Ventus's funding hopes, many in Maine feared that a once-in-a-generation opportunity had been lost.[299] Maine had the opportunity to become the hub of the offshore wind industry and its cutting-edge technology, secure billions in investment in Maine's small economy, create thousands of jobs, and achieve energy independence for Maine and New England in an environmentally responsible and safe manner. This loss was compounded when it was announced on July 15, 2014, that Statoil was investing $2.5 billion dollars in an offshore wind farm in Norwich, England.[300] It was seen as a glimpse of the titanic industry that could have been in Maine and a searing reminder of Maine's lost opportunity.[301] What happens next to Maine's offshore wind

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293. *Id.*

294. Tux Turkel, *UMaine's Ocean Wind Proposal Suffers Big Setback*, PORTLAND PRESS HERALD (May 7, 2014), https://perma.cc/KX5G-RDWV.

295. Turkel, *supra* note 251.

296. *Id.*

297. Turkel, *supra* note 294.

298. Turkel, *supra* note 251.

299. *Maine Blows It with Statoil*, *supra* note 279.

300. Eric Russell, *Energy Company That Pulled out of Maine Invests $2.5 Billion in UK Offshore Wind Farm*, PORTLAND PRESS HERALD (July 15, 2014), https://perma.cc/2EBW-RSHJ.

301. *Id.*

industry remains to be seen. However, the circumstances leading to Statoil's departure well-illustrate just how political challenges have and may continue to damage New England's offshore wind industry's potential.

V. CHALLENGES GOING FORWARD AND POSSIBLE HOPES FOR PROGRESS AND SOLUTIONS: THE PATH FORWARD FOR OFFSHORE WIND

Despite the many and significant challenges to offshore wind in New England, there are viable solutions that could facilitate the creation and growth of offshore wind in the region.

One potential solution is to simply stay the current course and remain cautiously optimistic that several factors will begin to ease offshore wind's progress and development. First, with every year that passes, wind turbine technology decreases in cost and increases in efficiency.[302] As these costs and efficiencies continue to decrease and increase respectively, offshore wind will become more and more economically competitive, achieving grid parity in more and more instances to the point where it will be more difficult for politicians and the private sector—the fossil fuel industry aside—to resist adopting offshore wind and other renewable energies.[303] Second, the environmental studies on offshore wind's potential negative environmental effects will continue to be conducted and could continue to conclude that offshore wind is an environmentally friendly source of energy, easing some of the legal challenges to offshore wind.[304]

Another potential solution, and the one with which this author endorses and fully agrees, presents the best possibility for offshore wind's future and was put forth by the Clean Energy Group (CEG) in its report "Up in the Air: What the Northeast States Should Do Together on Offshore Wind Before It's Too Late."[305] In this report, the CEG focuses on offshore wind power in several Northeast states: Maine, New Hampshire, Massachusetts,

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302. Tim McDonnell, *Wind Energy Will Be Cheaper Than Fossil Fuels Within a Decade*, MOTHER JONES (Mar. 17, 2015, 1:56 PM), https://perma.cc/ZB5S-SCM7; *see* The Eng'r, *The Wind Turbine Has Been Reinvented and Is 600% More Efficient Than Current Design*, WONDERFUL ENGINEERING (Feb. 23, 2014), https://perma.cc/M5ZL-MFKB (providing an example of an economic wind turbine design that produces 600% more energy than traditional wind turbines); RYAN WISER & MARK BOLINGER, LAWRENCE BERKELEY NAT'L LAB., 2013 WIND TECHNOLOGIES MARKET REPORT 73 (2014).

303. *See* Simon Schmidt, *Onshore Wind Reaching Grid Parity—Why Not Top It?*, MOVENTAS (Apr. 23, 2014), https://perma.cc/8JF5-VV3L (discussing the Most Admired Knowledge Enterprises' study, which found that onshore wind energy is very close to grid parity with conventional generation).

304. *See generally* OSPAR COMM'N, ASSESSMENT OF THE ENVIRONMENTAL IMPACT OF OFFSHORE WIND-FARMS (2008) (providing an example of an assessment of an offshore wind-farm development and its environmental impacts).

305. LEWIS MILFORD ET AL., UP IN THE AIR: WHAT THE NORTHEAST STATES SHOULD DO TOGETHER ON OFFSHORE WIND BEFORE IT'S TOO LATE (2015), https://perma.cc/H7S3-5F5Q.

Rhode Island, Connecticut, New York, and New Jersey.[306] The CEG report discusses a variety of benefits to these states—many of which coincide with the benefits to New England outlined in this article—that offshore wind could provide and concisely summarizes several of the obstacles that several of these states have run into, including the Cape Wind[307] and Statoil Hywind[308] projects summarized in this article.[309] The CEG report concludes by opining that the obstacles that the individual states that it has listed have faced demonstrates that states acting individually is not a path for success on offshore wind and that what is needed is what the report terms a "Multi-State Consortium" that could collectively coordinate and act on offshore wind to produce more efficient, cost-effective projects and results on offshore wind.[310] The CEG report concludes that without this type of multi-state coordination and action, offshore wind may soon reach the point where it loses its opportunity to become an economically competitive and viable industry in the United States for good.[311]

Despite the grim outcome that the CEG Report warns of, recent events in New England give reason for cautious optimism. First, on January 29, 2015, the federal government held a competitive lease sale for offshore wind areas in federal waters.[312] The leases are currently held by Deepwater Wind, Danish Oil and Natural Gas Energy (DONG), and Offshore MW.[313] Construction commenced on Deepwater Wind's Block Island project offshore of Rhode Island on April 27, 2015.[314] The Block Island project will be a 30-megawatt, five-turbine wind farm that is scheduled to be online in 2016 and which would obtain the landmark status of being America's first offshore wind farm.[315]

Second, the arrival of the experienced European offshore wind company, DONG, and its plans to construct a massive offshore wind farm south of Martha's Vineyard, Massachusetts has inspired a great deal of excitement in New England.[316] DONG's wind farm is slated to include as

306. *Id.* at 20.

307. *Id.* at 4.

308. *See id.* ("In Maine, the state's effort to reopen bidding for a pilot offshore wind project, after a proposal had already been approved for a power purchase agreement (PPA), created major issues with wind development.").

309. *Id.*

310. *Id.* at 14–15.

311. *Id.* at 22.

312. *Commercial Wind Leasing Offshore Massachusetts*, BUREAU OF OCEAN ENERGY MGMT., https://perma.cc/L4CG-G8Z2 (last visited Oct. 27, 2016).

313. Joe Ryan, *A U.S. State Has Key to $10 Billion Offshore Wind Boom*, BLOOMBERG (May 2, 2016, 7:00 PM), https://perma.cc/LC5B-8EFE.

314. Devin Henry, *Work Begins on Nation's First Offshore Wind Farm*, THE HILL (Apr. 27, 2015, 2:13 PM), https://perma.cc/K89T-4D5R.

315. *Id.*

316. Jay Fitzgerald, *European Firm Pitches Huge Wind Farm off Martha's Vineyard*, BOS.

many as 100 turbines, generating as much as 1,000 megawatts of electricity.[317] Cementing DONG's interest in New England's offshore wind potential, Massachusetts recently passed an energy law that mandated the purchase of 1,600 megawatts of electricity generated by offshore wind over a decade,[318] with one of DONG's agents opining that the law and its 1,600-megawatt mandate would be "the last piece of the puzzle to get the industry going."[319]

Third, the devastating decision by the DOE to pass over Maine Aqua Ventus for the coveted $47 million federal grant turned out not to be as final as originally believed.[320] The three winning projects in New Jersey, Oregon, and Virginia all failed to comply with the DOE's requirements for the grant and thus, were not awarded the grants per the original timeframe.[321] The three projects were given an extension until May 1, 2016, to meet the DOE's requirements, after which, DOE ended up retracting its grant from Oregon and Virginia and reallocated the grant to Maine Aqua Ventus and to Lake Erie Energy Development Corporation.[322] The surprise decision, which came on May 27, 2016, swiftly revitalized hopes that a booming offshore wind industry can be developed off of Maine's coast and lay the foundation to attract the private investment necessary to complete the funding of the project.[323] Indeed, on June 3, 2016, only two weeks after the DOE's decision, the French defense company, DCNS Group, announced that it is partnering with Aqua Ventus to assist in developing the offshore wind project.[324] Although DCNS Group has not yet announced a financial commitment, the company has annual revenues of $3.47 billion and roughly 13,000 employees in ten countries.[325]

CONCLUSION

Offshore wind in New England undoubtedly faces a difficult path forward: The regulatory process for offshore wind shows no signs of simplifying anytime in the near future; the legal challenges to offshore wind

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GLOBE (Nov. 10, 2015), https://perma.cc/B4HJ-WKAR.

317. *Id.*

318. An Act to Promote Energy Diversity, ch. 188, sec. 12, § 83(C)(b), 2016 Mass. Acts.

319. Ryan, *supra* note 313.

320. Tux Turkel, *Maine Offshore Wind Project Still Faces Money Hurdles, Despite Federal Grant*, PORTLAND PRESS HERALD (Nov. 16, 2015), https://perma.cc/UAF2-HHAZ.

321. *Id.*

322. Darren Fishell, *UMaine Offshore Wind Project in Line for Full Federal Funding*, BANGOR DAILY NEWS (May 27, 2016, 11:33 AM), https://perma.cc/7EYG-RPV5.

323. *Id.*

324. Tux Turkel, *French Defense Contractor Joins Maine Offshore Wind Power Project*, PORTLAND PRESS HERALD (June 8, 2016), https://perma.cc/ED6D-KNUS.

325. *Id.*

will continue, especially as deep-water turbines are tested that may or may not have environmental impacts; and the political climate remains uncertain. However, New England retains vast potential in offshore wind that could bring a multitude of benefits to New England from reduced electric rates to energy independence to thousands of jobs and billions of dollars in investment. Cape Wind and Statoil Hywind provide grim pictures of how the various obstacles and challenges to offshore wind can delay or destroy these vast potential benefits.

Yet, there is a path forward. Whatever its difficulties in New England and the United States, offshore wind technology continues to expand globally, and the costs and efficiency of the technology will thus inevitably become more competitive and attractive to the public and private sectors. An offshore wind multi-state consortium is not politically impossible, and there are encouraging signs in the region from the federal leases, to the Massachusetts energy legislation, to DONG's arrival in the United States, and finally to Maine Aqua Ventus winning the federal grant and partnering with DCNS Group. For the present, however, offshore wind in New England remains stuck in limbo.