CATCHING THE WIND:

STATE ACTIONS NEEDED TO SEIZE THE GOLDEN OPPORTUNITY OF ATLANTIC OFFSHORE WIND POWER

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Authors: Catherine Bowes & Amber Hewett — National Wildlife Federation.

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EXECUTIVE SUMMARY

The Atlantic coastline is at the epicenter of America's energy and environmental challenges, with state leaders currently facing critical decisions to meet the region's growing energy demands and protect our communities and wildlife from the impacts of climate change. The cities, metropolitan areas, and sprawling suburbs that stretch along the East Coast have a massive, pollution-free energy source ready to meet these challenges — offshore wind.

Responsibly developed offshore wind power offers a golden opportunity to meet our coastal energy needs with a clean, local resource that will spur investments in local economies — creating unparalleled job growth and avoiding the need to export hard-earned energy dollars outside the region. For over twenty years, Europe has been reaping these benefits of offshore wind power — including over 58,000 jobs — and countries around the globe are rapidly mobilizing to tap their offshore wind resources using today's commercially available, advanced technologies.

Thanks to the leadership of the federal government, forward-thinking state leaders, resolute wind industry pioneers, and engaged stakeholders, this immense clean energy resource is finally within reach. This report documents the unique benefits of Atlantic offshore wind power and highlights key progress made to date, while identifying the critical actions state leaders must take to build on this foundation and finally bring this game-changing clean energy solution online.

Key report findings include:

- **Offshore Wind Can Supply Massive Amounts of Pollution-Free Power When and Where We Need It Most.** All along the Atlantic coast lies a valuable energy resource that can provide clean power at times of peak energy demand. For example, meteorological towers have confirmed strong, consistent wind speeds off of New England and New York during critical high electricity demand periods when the most expensive and polluting power sources are used — afternoons, summer heat waves, and winter cold snaps.
- **Areas Already Designated for Offshore Wind Power Development Could Power Over 5 Million Average American Households.** The federal government has completed environmental reviews for over 1.5 million acres along the Atlantic coast with 16,000 megawatts (MW) of electricity generation potential, and has or is set to lease these areas to offshore wind developers for pre-development activities. This is a massive, local clean power opportunity currently available to state energy planners with the capacity to power the equivalent of all households in New Jersey and South Carolina combined.
- **Offshore Wind Power Could Save Millions as Part of a Diverse Energy Portfolio.** Diversifying our energy mix is critical for protecting ratepayers from price spikes in the volatile fossil fuel markets. A new 2014 study estimates a $350 million per year reduction in energy costs from adding 1,200 MW of offshore wind energy to New England's grid, a modest projection based on areas already designated for offshore wind development. This savings would result in a 2% reduction for ratepayers.
- **Offshore Wind Power Will Spur the Creation of Good-Paying Jobs.** In Europe, 70 offshore wind projects across 10 countries are producing over 6,500 MW of power and currently supporting over 58,000 jobs in both coastal and inland communities. Today, offshore wind power is a booming global industry with over $20 billion in annual investments projected for the next 10 years. Due to the sheer size and complexity of offshore wind components and construction needs, this industry offers dramatic potential for new local job creation for America.
- **Offshore Wind Power Can Be Developed in an Environmentally Responsible Manner that Protects Wildlife.** As decades of experience in Europe indicates, strong environmental requirements are needed to ensure that offshore wind power is sited, constructed, and operated in a manner that avoids, minimizes, or mitigates impacts to coastal and marine wildlife.

There is unprecedented momentum along the coast in advancing offshore wind power, with two projects within sight of the finish line and substantial areas of federal waters currently available for leasing. A review of progress to date finds:

- **Leading the Way: Massachusetts** and **Rhode Island** are clearly leading America's pursuit of offshore wind power with necessary leases, permits, and contracts in place for two projects to begin construction off their shores in 2015. Two large federal Wind Energy Areas have been designated off of southern New England, one of which has already been leased and the second is on track for leasing by the end 2014. The over 8,000 MW of electricity generation potential identified across these areas could provide a massive

new clean energy source for New England as well as New York, given proximity to Long Island and a key opportunity presented by the Long Island Power Authority's current "Request for Proposals" for 280 MW of local renewable energy.

- **Significant Momentum: Maryland** has made major progress in pursuing offshore wind power, including passing a precedent-setting state policy in 2013 to incentivize 200 MW of offshore wind development. The federal government is set to hold a lease auction for the Maryland Wind Energy Area in August 2014.

- **Key Steps Forward: Virginia, New York, New Jersey,** and **Delaware** have all taken key steps forward to pursue offshore wind power and initial progress has been achieved in terms of proposed projects, finalized and/or leased federal Wind Energy Areas, and key studies completed.

- **Initial Activities Underway: Maine, North Carolina, South Carolina,** and **Georgia** have offshore wind research and preliminary planning activities underway.

While there is much to celebrate in the progress key states have made in pursuit of offshore wind power, we are facing a critical moment to ensure America takes this great leap forward and fully ushers in the massive new clean energy source available off our shores. In order to move from the planning stages to actively developing America's offshore wind resource at the scale that can deliver substantial environmental and economic benefits, state leadership is urgently needed to build long-term markets for offshore wind power.

NWF and our partners call on Atlantic Coast leaders to build on this foundation and take the following steps necessary to launch transformational offshore wind power for America:

1. **Set a bold goal for offshore wind power in the state's energy plan.**

2. **Take action to ensure a competitive market** for offshore wind power by: passing and implementing policies to directly advance offshore wind power and reduce pollution across the electricity sector; pursuing regional market-building opportunities; and supporting key federal incentives.

3. **Advance critical contracts for offshore wind projects** by facilitating and approving necessary power purchase contracts and rate recovery proposals, and pursuing regional procurement opportunities.

4. **Ensure an efficient, environmentally responsible leasing process** by working closely with the federal government and key experts and stakeholders to ensure transparency and strong protections for coastal and marine wildlife as offshore wind development moves forward.

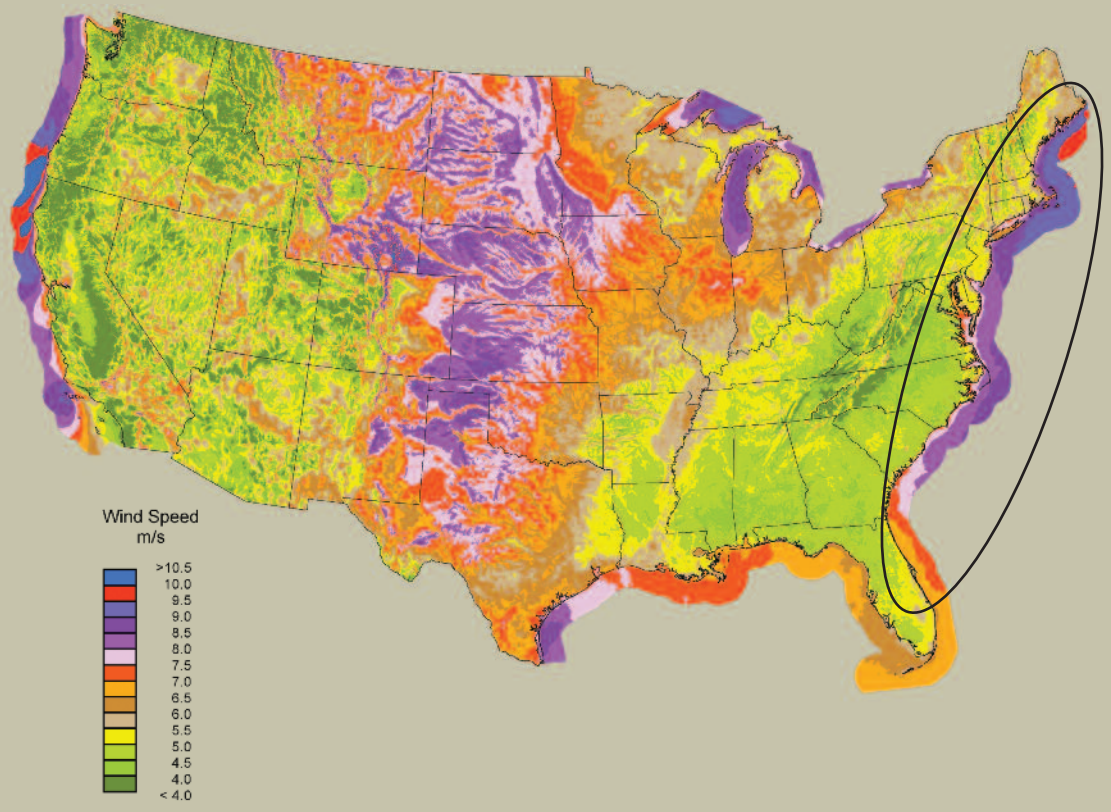
5. **Invest in key research, initiatives, and infrastructure** helpful for advancing offshore wind development including baseline environmental data, stakeholder engagement initiatives, opportunities to maximize local supply chain and job creation, and upgrades to transmission or port facilities.

ATLANTIC OFFSHORE WIND POWER

A GOLDEN OPPORTUNITY TO BENEFIT OUR ENVIRONMENT AND STRENGTHEN OUR ECONOMY

Along the Atlantic Coast lies a massive, world-class wind energy resource — far offshore, yet available to our major metropolitan areas — offering an unmatched solution to the region's energy and environmental challenges. Harnessing just a fraction of this resource, estimated at over 1,300 gigawatts (GW) of electricity generation potential, would result in a fundamental transformation in how and where this country produces energy — decreasing our reliance on fossil fuels, stabilizing energy prices, creating local good-paying jobs, enhancing our nation's global competitiveness, and helping protect wildlife and future generations from the dangerous impacts of climate change.[1]

EAST COAST ENERGY GOLD MINE



- Strong, consistent wind resource available offshore
- Accessible with commercially available technology
- Within reach of over 1/3 of America's population

SOURCE: Map: National Renewable Energy Laboratory (2012); U.S. Energy Information Administration electricity sales data (2014); U.S. Census Bureau population data (2011)

ATLANTIC OFFSHORE WIND POWER OFFERS A UNIQUE OPPORTUNITY TO:

1. Produce Clean Power Where and When We Need It Most

New and diverse energy solutions are needed to meet the staggering demand of America's East Coast energy markets. States along the Atlantic account for roughly one-third of the entire country's electricity demand, requiring our coastal electric utilities to meet the intense power needs of areas five times more densely populated than the national average.[2]

With major changes unfolding in today's energy markets — including retirements of both coal and nuclear generation and an increasing reliance on natural gas for both electric and heating needs — it is more essential than ever to ramp up local energy sources that create jobs and ensure the protection of the coast's natural beauty, quality of life, and critical tourism industry.

While millions of air conditioners hum in unison along the coast in the summer, and heaters crank up across the region to combat winter temperatures, electricity grid operators are forced to utilize so-called "peaking generation" to meet demand, which currently are the region's dirtiest and most expensive fuel sources.[3] Fortunately, the same weather events that increase our heating and cooling needs also produce substantial winds offshore, a fortuitous reality called "peak load coincidence."[4] Meteorological towers and buoys collecting data at the Cape Wind and Block Island Wind Farm project sites confirm this important correlation between periods of high electricity demand — afternoons, summer heat waves, and winter cold snaps — and strong, consistent wind speeds offshore.[5]

Of all the region's energy sources, offshore wind power is the only clean energy opportunity at scale that can produce the electricity our major coastal cities and suburbs demand right when and where it is needed, investing our hard-earned energy dollars in local communities and avoiding the need for costly, controversial new transmission lines that threaten our natural resources and wildlife corridors.

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CLIMATE CHANGE, A COASTAL HAZARD HERE AND NOW

Atlantic coastal communities are on the frontlines of climate change. Superstorm Sandy brought brutal awareness to the Northeast and Mid-Atlantic of what coastal storms in a warming world can look like, with tragic and costly consequences for our communities and wildlife — including over $70 billion in damages.[6] Two major reports issued this year outline the sobering projections for intensifying climate impacts along the coast:

"Due to sea-level rise projected throughout the 21st century and beyond, coastal systems and low-lying areas will increasingly experience adverse impacts such as submergence, coastal flooding, and coastal erosion."
– Intergovernmental Panel on Climate Change (2014)[7]

"Sea level rise poses widespread and continuous threats to both natural and built environments and to the regional economy… Increasing temperatures and the associated increase in frequency, intensity, and duration of extreme heat events will affect public health, natural and built environments, energy, agriculture, and forestry."
– National Climate Assessment (2014)[8]

Dramatic reductions in carbon emissions, along with robust investments in resiliency planning, are needed in order to protect our coastal communities and wildlife from this urgent threat. Offshore wind power offers a critical solution that can match the scale of this challenge.

2. Diversify Our Energy Portfolio: Reducing Costs and Pollution

The abundance of offshore wind power available at times of peak energy demand offers a critical opportunity to diversify our regional energy mix, leading to:

Lower, More Predictable Energy Prices: A more diverse energy portfolio can help protect ratepayers from volatile fossil fuel prices and the costs associated with increased demand during extreme hot and cold weather events.[9] As an example, the winter of 2013-2014 put our energy system to the test, and utility bills across the Northeast reflected that our lack of fuel diversity comes at a very high cost.[10] New York experienced record-breaking wholesale energy prices, with a 176% spike in January alone.[11] Offshore wind power can help reduce these costs by providing a substantial, stable power source with no fuel cost at precisely these times.

Wind power also saves money on ordinary days. Thanks to decades of experience with onshore wind power in the U.S., this "price suppression" effect is increasingly well-documented.[12] Multiple analyses project significant increased ratepayer benefits from bringing offshore wind power online given its strong correspondence with peak demand, including a new 2014 study estimating a $350 million per year reduction in energy costs from adding 1,200 MW of offshore wind energy to New England's grid — a modest projection based on areas already identified for offshore wind development (see p. 10).[13] These savings would reduce retail electric rates by roughly $3/MWh — a 2% reduction for ratepayers. A similar analysis found that the Cape Wind project alone will reduce the price of electricity in the region by $7.2 billion over 25 years due to price suppression from displacing more expensive fossil fueled power.[14]

Local Pollution Reductions: Ramping up offshore wind power in the coastal energy mix offers a clear opportunity to reduce local pollution as well as energy prices. For example, the 2014 analysis of bringing 1,200 MW of offshore wind power online in New England found that local carbon dioxide emissions would be reduced by over 3 million tons, sulfur dioxide (SO2) emissions by roughly 3,000 tons, and emissions of nitrogen oxides (NOx) by over 1,100 tons.[15]

Flickr: Nick Humphries

OFFSHORE WIND POWER: Key Opportunity to Meet New Federal Carbon Pollution Limits

On June 2nd, 2014, the U.S. EPA proposed the Clean Power Plan, America's first-ever limits on carbon pollution from existing power plants, creating yet another incentive for coastal states to tap into the expansive, zero-carbon wind resource blowing off their shores.[16] The Clean Power Plan sets individual carbon emissions targets for each state that can be met through a range of strategies, including ramping up local renewable energy sources. States are responsible for developing compliance plans by June 2016 detailing how they will achieve their required emission reductions by 2030. With over 16,000 MW of generation capacity currently available for offshore wind power leasing, and significant additional wind resources off America's coastlines, offshore wind power offers an unmatched source of new carbon-free energy for states to meet their emission targets. Offshore wind power and the Clean Power Plan thus can work hand-in-glove to deliver significant benefits along the coast: states have a powerful tool to meet federal carbon targets and launch a transformative local energy source.

How Does Price Suppression Work?

Electricity providers purchase power through hourly auctions from the range of power plants available, selecting the cheapest sources first before moving onto higher-cost options. Once online, the primary driver of cost for a power plant to produce electricity is fuel. Since wind projects pay nothing for wind, grid operators prioritize this source over power plants with greater fuel costs. As a result, wind power displaces the least efficient and most expensive power sources in our energy mix, decreasing the market clearing price for electricity and creating significant cost savings across the system.

3. Provide an Environmentally Responsible Energy Source

The Atlantic Ocean and its coastal areas are home to thousands of treasured species of fish, sea turtles, birds, whales, and other wildlife that sustain the region's economy and quality of life. Our current reliance on fossil fuels directly impacts wildlife through mercury contamination and other air and water pollution, as well as habitat destruction from a range of fuel exploration and extraction processes.[17] Carbon emissions from fossil fuels also pose grave threats to coastal and marine wildlife as sea level rise and extreme weather reshapes shorelines, inundating vital foraging and nesting habitat, and the warmer, more acidic waters threaten to destabilize already stressed food webs.[18]

Ramping up clean energy is critical for protecting all wildlife from these dangers, but we also must ensure that renewable energy is designed with nature in mind. All energy sources have some impacts on wildlife, but research shows that responsibly developed offshore wind power can have far fewer impacts on coastal and marine wildlife than the alternatives.

Decades of experience in Europe indicates that offshore wind power can be an environmentally responsible energy solution that avoids or minimizes impacts to wildlife. While conditions are different here in the U.S., initial research on birds, bats, sea turtles, and marine mammals in the Atlantic indicates that we can achieve positive results if siting and permitting decisions are based on sound science, informed by key experts and stakeholders, and result in strong requirements to protect wildlife throughout the offshore wind development process and operation of the projects.[19]

Identifying locations that steer projects farther offshore and avoid biologically sensitive areas is the first key step, followed closely by strong requirements for offshore wind developers to minimize any remaining impacts through scientifically derived best practices and standards for the research, design, construction, and operation of offshore wind projects.[20]

Young puffins in the Gulf of Maine are already feeling the effects of climate change. Warming ocean temperatures are sending the fish they depend on northward, and fish that are simply too large for them to eat have moved into nearby waters. Threats to all coastal and ocean birds and their habitats underscore the urgency of ending our reliance on carbon-polluting power sources.

Critically endangered North Atlantic Right Whales migrate along the Atlantic Coast from their breeding grounds in the south to summer foraging grounds off the coast of New England. Strong measures are needed to protect whales from the underwater noise and ship traffic associated with offshore wind development, such as: appropriate siting; seasonal restrictions on certain development activities; vessel speed restrictions; sound reduction technologies; and increased monitoring efforts.

The success of Europe's offshore wind power industry can be measured in far more than just gigawatts, as the port of Bremerhaven demonstrates. Once a depressed economy with a shrinking population, Bremerhaven is now the recipient of billions of dollars of private and public investment and home to a booming hub of offshore wind infrastructure construction and deployment, supporting more than 5,000 direct jobs in the local region.[31]

OFFSHORE WIND POWER IS A BOOMING GLOBAL INDUSTRY

Global investments in offshore wind power are projected to exceed $20 billion annually over the next 10 years.[26]

Europe has been harnessing offshore wind power for over 20 years, with 70 projects online across 10 countries, currently producing over 6,500 MW and supporting 58,000 jobs. Europe has set a goal of producing 40 GW — and 200,000 jobs — by 2020.[27]

China currently has 430 MW of offshore wind power installed, with a goal 5 GW by 2015 and 30 GW by 2030.[28]

Japan recently boosted its offshore wind power goal to 37 GW by 2050.[29]

4. Spark Transformative Economic Development Opportunities

European countries have been consistently ramping up offshore wind development since Denmark installed the world's first offshore wind turbines in 1991. Today, offshore wind power is a booming global industry with 70 offshore wind projects across 10 countries, currently supporting 58,000 jobs.[21] These are long-term, quality jobs across a variety of sectors in both inland and coastal regions. A vibrant offshore wind industry can revitalize port communities struggling to survive in the face of changing maritime and other trade-based economic opportunities, thanks to the concentration of manufacturing, construction, engineering, operations, and maintenance jobs that directly result from major offshore wind investments. Cities like Bremerhaven, Germany and Esbjerg, Denmark have experienced a dramatic economic transformation, offering shining examples of what's possible for the U.S. with a significant commitment to offshore wind power.[22]

We believe that our local economies, and those of other communities from coast to coast, are primed to become the beneficiaries of thousands of new jobs from a new national renewable energy industry that has the capacity to power millions of homes — offshore wind.

Mayor Jon Mitchell (D - New Bedford, MA) and Mayor Will Sessoms (R - Virginia Beach, VA)
Op-ed in *The Hill*, 6/10/14[30]

More than two decades of evidence shows that when megawatts increase, so do jobs. Europe has set a goal of producing over 40 GW of offshore wind power by 2030, which is projected to support over 300,000 jobs. The U.S. Department of Energy has projected similar results from launching a robust, domestic offshore wind industry here, with over $200 billion in overall economic activity projected to result from harnessing just a fraction of our available wind resource offshore.[24] In 2013, Massachusetts broke ground in New Bedford on the nation's first port terminal built to deploy offshore wind power, which is already creating over 120 new jobs and substantial new business for dozens of local companies and contractors.[25] This is an exciting, tangible example of what's to come when America finally commits to bringing our massive offshore wind resource online.

ATLANTIC OFFSHORE WIND DEVELOPMENT: CURRENT STATUS

Thanks to the leadership of the federal government, visionary state leaders, resolute wind industry pioneers, and engaged stakeholders along the coast, America is finally on the cusp of reaching a new clean energy frontier. With strong public support and recent progress by the U.S. Department of the Interior's Bureau of Ocean Energy Management (BOEM) in designating significant areas of the Atlantic Ocean for offshore wind power development, states now have the opportunity to tap this clean energy resource at scale and bring thousands of megawatts of clean power online right where we need it.

Key signs of momentum include:

America's First Projects Are on Track for 2015. Two leading projects in New England are within sight of the finish line, with plans in place to initiate offshore construction in 2015. *Cape Wind* (468 MW off Massachusetts) and the *Block Island Wind Farm* (30 MW off Rhode Island) have received the power purchase contracts and permits and/or leases needed to begin the construction process, and both developers have announced their intention to begin building the projects next year.[32]

Over 1.5 million acres off the Atlantic coast have been formally designated for wind energy development, an area that could support over 16,000 MW of electricity – enough to power over 5 million average American homes.[33] Through BOEM's Smart from the Start process, formal Wind Energy Areas have been designated off the coasts of Massachusetts, Rhode Island, New Jersey, Delaware, Maryland, and Virginia and the process is currently underway for North Carolina, New York, and South Carolina.[34] BOEM has awarded leases for three of these areas (Virginia, Delaware, and the shared Rhode Island-Massachusetts area), scheduled a lease auction for Maryland in August 2014, and announced plans to hold auctions for the Massachusetts and New Jersey areas this year.

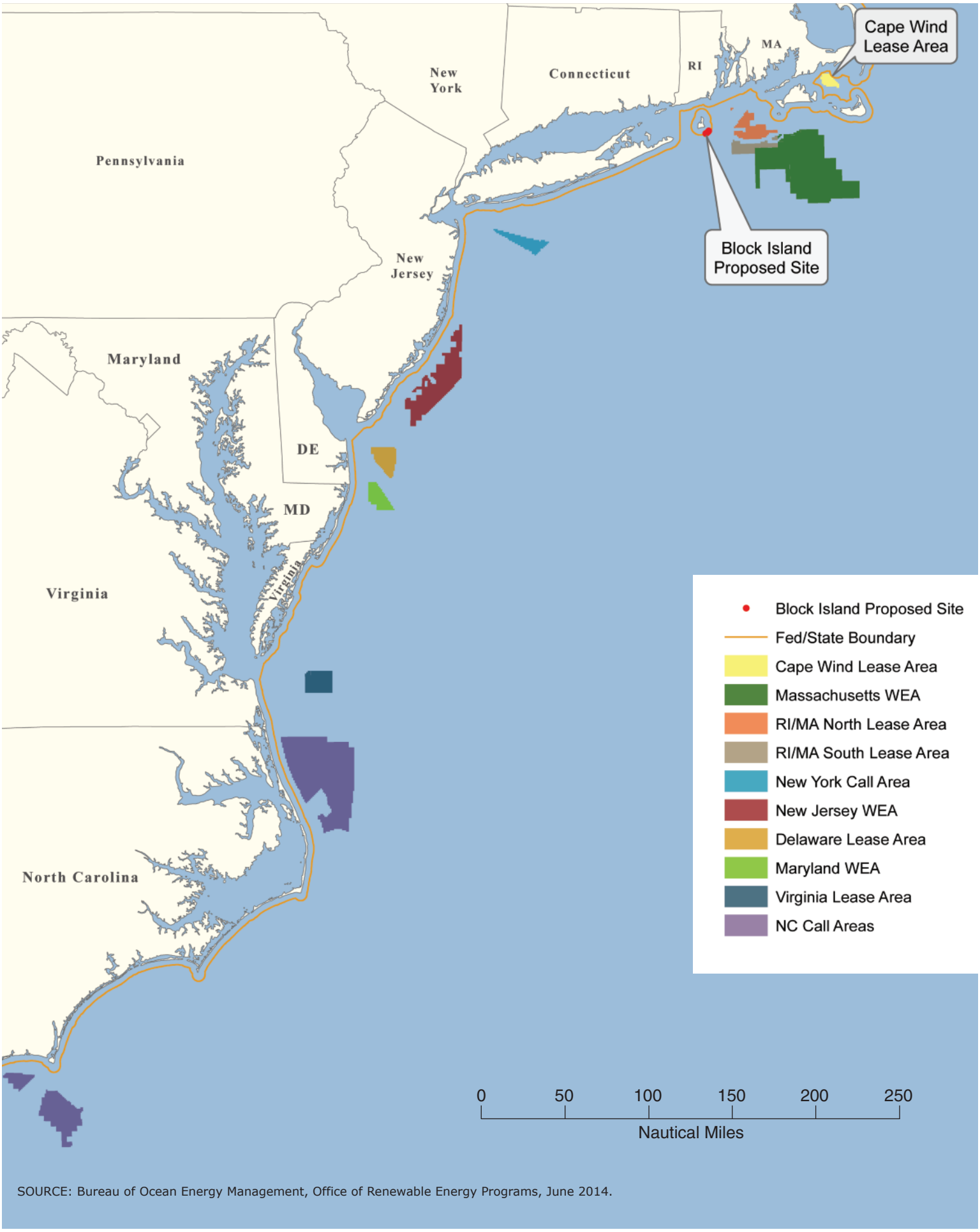
The federal Department of Energy (DOE) is investing in Atlantic offshore wind power. On July 2, 2014, DOE announced a conditional commitment to support the construction of *Cape Wind* with a $150 million federal loan guarantee, a key demonstration of national interest in advancing offshore wind power by leveraging private investment in this precedent-setting project.[35] This spring DOE announced a second round of funding for three Offshore Wind Advanced Technology Demonstration Projects to be online by 2017, which included over $47 million apiece for two projects in the Atlantic: Dominion Power's *Virginia Offshore Wind Technology Advancement Project* (12 MW off Virginia) and Fishermen's Energy *Atlantic City Windfarm* (30 MW off New Jersey). DOE also awarded an additional $3 million to the University of Maine to continue studies and work to develop a 12 MW floating turbine pilot project. In addition to the Atlantic projects, DOE has also invested in a floating turbine demonstration project off the West Coast as well as research into offshore wind market development, supply chain, technology, and deployment issues.[36] This significant support from the federal government will not only spur key advancements in offshore wind technology, it also provides an important signal to the investment community about America's emerging offshore wind power market.

ESTIMATED GENERATION POTENTIAL OF FEDERAL WIND ENERGY AREAS (MW)

Massachusetts	5,000
Rhode Island-Massachusetts	3,395
New Jersey	3,400
Delaware*	1,254
Maryland	1,200
Virginia**	2,000
Total	**16,249**

SOURCES: National Renewable Energy Laboratory Analysis; *estimated using NREL protocol; **BOEM press release 7/22/13

CURRENT ATLANTIC OFFSHORE WIND PLANNING AND PROJECT AREAS



SOURCE: Bureau of Ocean Energy Management, Office of Renewable Energy Programs, June 2014.

STATE ACTIONS TO ADVANCE OFFSHORE WIND POWER

	GOAL	RENEWABLE ENERGY POLICY	CARBON POLICIES	INITIATIVES/ INVESTMENT	FEDERAL ITC SUPPORTERS*
ME	5 GW by 2030 (2010)	Renewable Portfolio Standard (RPS): 40% by 2017 (10% from new sources)	Regional Greenhouse Gas Initiative (RGGI)	U.Maine: DeepCwind Consortium; Advanced Structures and Composites Center	House: 2 (100%) Senate: 2
NH		Renewable Electricity Standard (RES): 25% by 2025	RGGI	2014 legislation created offshore wind study committee	House: 2 (100%) Senate: 1
MA	1.5 GW by 2020 (2009)	RPS: 15% by 2020, increasing 1% per year; Green Communities Act requires 7% of load to be long term contracts from renewable sources (2012)	RGGI; Global Warming Solutions Act (25% GHG emissions reduction by 2020, 80% by 2050)	MassCEC investment: New Bedford Marine Commerce Terminal; Charlestown Wind Technology Testing Center; Habitat and Fisheries Working Groups; key wildlife studies; UMass Wind Energy Center research	House: 9 (100%) Senate: 2
RI		RES: 16% by 2019; legislation supporting long-term power contracts (2009)	RGGI	RI Ocean Special Area Management Plan (2010); Habitat and Fisheries Advisory Boards	House: 2 (100%) Senate: 2
CT		RPS: 27% by 2020	RGGI; Global Warming Solutions Act (10% GHG emissions reduction by 2020, 80% by 2050)		House: 2 (40%) Senate: 2
NY		RES: 30% by 2015; LIPA Renewable RFP 280 MW	RGGI; Executive Order w/goal of 80% GHG reduction by 2050 (2009)	***NYPA/LIPA/ConEd Collaborative Offshore Wind Project (350-700 MW)*** proposal; NY Department of State Offshore Atlantic Ocean Study (2013); NYSERDA studies and NY Wildlife and Marine Energy Project (2014)	House: 15 (56%) Senate: 1
NJ	1,100 MW (2010)	RPS: 23% by 2021, Offshore Wind Development Act requires 1,100 MW of state's electricity to be supplied by offshore wind (2010); 100% tax credit for $50M+ capital investments (2010)	Global Warming Response Act (20% GHG emissions reduction by 2020, 80% by 2050)	NJ DEP Ocean/Wind Power Ecological Baseline Studies (2010)	House: 7 (58%) Senate: 1
DE		RES: 25% by 2025, with a 3.5 multiplier for offshore wind by May 2017	RGGI		House: 1 (100%) Senate: 2
MD	200 MW by 2017 (2013)	RES: 20% by 2022; Offshore Wind Energy Act requiring 2.5% of state's electricity (roughly 200 MW) to be supplied by offshore wind (2013)	RGGI; Greenhouse Gas Reduction Act (state to develop plan for 25% reduction by 2020)	Offshore Wind Development Fund: $700,000 (2012)	House: 5 (63%) Senate: 2
VA	3,000 MW by 2025 (2011 non-binding legislative resolution)	Voluntary RES: 15% by 2025, with a multiplier credit for offshore wind; Legislation declaring offshore wind planning in the public interest (2014)		Executive Order establishing Virginia Energy Council (2014); VA DMME investment in VOWTAP project and $800,000 - $1 million annually for offshore wind research; Virginia Offshore Wind Development Authority established (2010)	House: 3 (27%) Senate: 1
NC		RES: 12.5% by 2021		UNC Offshore Wind Feasibility Study, prepared for NC General Assembly (2009)	House: 2 (15%) Senate: 0
SC				Legislative resolution to recognize offshore wind resource (2014); SC Regulatory Task Force for Coastal Clean Energy; Clemson Wind Turbine Drive Train Testing Facility; Offshore Wind Feasibility Study (2008)	
GA				GA Department of Natural Resources Coastal and Marine Portal effort underway; Georgia Energy Finance Authority-led GA Wind Working Group	House: 1 (7%) Senate: 0
FL					House: 5 (19%) Senate: 0

*Support demonstrated by either cosponsoring a federal Offshore Wind Investment Tax Credit (ITC) bill (S. 401 & H.R. 924) or signing onto letters expressing support for an ITC extension led by Senators Udall and Grassley and Representatives Loebsack and King (released March 21, 2014), and Senator Markey (released April 1, 2014).

PROGRESS ACHIEVED IN ADVANCING OFFSHORE WIND POWER

	FEDERAL LEASING STATUS	STATE REGULATORY APPROVALS FOR PERMITS/CONTRACTS	PROJECTS MOVING FORWARD (LEASES/PERMITS & CONTRACTS SECURED)
ME		**Public Utilities Commission approved** term sheet for U. Maine pilot project ***Aqua Ventus*** (2014)	
NH			
MA	**Leases granted:** Cape Wind (2010); Deepwater Wind (2013, RI-MA Wind Energy Area) Proposed Sale Notice for MA Wind Energy Area issued, auction expected 2014	***Cape Wind (486 MW):* contracts approved** with National Grid (2010), NSTAR (2012)	***Cape Wind:* offshore construction expected 2015**
RI	**Lease granted:** RI-MA Wind Energy Area (Deepwater Wind 2013, site assessment underway)	***Block Island Wind Farm (30 MW):* contract approved** with National Grid (2010); **state waters permits granted** (2014)	***Block Island Wind Farm:* offshore construction expected 2015**
CT			
NY	Wind Energy Area identification and environmental review process underway area off NYC; auction expected 2015		
NJ	NJ Wind Energy Area finalized, auction expected 2014	***Atlantic City Windfarm (25 MW):* state waters permits received** (2012); NJ Board of Public Utilities denied projet's application for Offshore Renewable Energy Certificate (2014)	
DE	**Lease granted:** DE Wind Energy Area (NRG Bluewater, 2012)		
MD	Final Sale Notice issued for MD Wind Energy Area, auction set for August 2014		
VA	**Lease granted:** VA Wind Energy Area (Dominion Power 2013; site assessment underway) Lease applications filed for ***Dominion/VA DMME VOWTAP project (12 MW)*** and research lease		
NC	Wind Energy Area identification and Environmental Assessment underway		
SC	Active BOEM Intergovernmental Task Force		
GA	Lease application filed by Southern Company, Environmental Assessment completed		
FL			

ANALYSIS OF STATE ACTIONS
TO ADVANCE ATLANTIC OFFSHORE WIND POWER

State governments have a critical role to play in driving the market for offshore wind power. It is a pivotal moment in America's pursuit of this new clean energy frontier, and increased state leadership is essential to seize the opportunity of the progress made to date and finally launch offshore wind power for America.

In order for offshore wind projects to ultimately move forward in newly designated Wind Energy Areas, commitments to purchase the power they will generate must be secured. Due to structural differences in regional energy markets, this can take the form of private companies, utilities, or state power authorities investing in developing projects. In every case, state leadership is crucial for creating clear long-term market certainty for offshore wind power and advancing and approving the contracts and rate recovery proposals necessary to stimulate investment and bring projects online.

Key state actions critical for advancing offshore wind power include: setting and implementing state policies to prioritize renewable energy, directly advance offshore wind power, and reduce pollution from power plants; funding useful research, stakeholder/expert engagement initiatives, and infrastructure investments; approving necessary contracts and permits; and ensuring their federal delegation supports strong national incentives to launch a robust offshore wind industry for America.

A review of the actions taken to date by state leaders along the coast shows a strong correlation between proactive leadership to pursue offshore wind power and tangible progress in moving projects forward (see Chart pgs. 12-13). While many states along the coast have policies in place to prioritize renewable energy or reduce pollution from fossil fuels, significant new actions are needed to truly seize the opportunity of offshore wind power. A comparative analysis of state actions reveals the following:

LEADING THE WAY: Massachusetts, Rhode Island
Offshore wind power projects have secured necessary contracts and leases/permits

SIGNIFICANT MOMENTUM: Maryland
Precedent-setting incentive policy and leasing process are both moving forward

KEY STEPS FORWARD: Virginia, New York, New Jersey, Delaware
States have taken steps forward to advance offshore wind power and the federal leasing process has commenced

INITIAL ACTIVITIES UNDERWAY: Maine, North Carolina, South Carolina, Georgia
Offshore wind research and preliminary planning activities underway

STATES TO WATCH: New Hampshire, Connecticut, Florida
No active offshore wind power planning activities

Leading the Way

By every measure, **Massachusetts** and **Rhode Island** are clearly leading America's pursuit of offshore wind power. Both states have shown considerable leadership to date in spurring offshore wind development — efforts which are poised to pay off as the nation's first projects begin construction off their shores in the coming year. While getting just one project into American waters will serve as an important national precedent, significant continued leadership by both of these states is critical to bring even a fraction of the over 8,000 MW of clean power online that NREL has estimated could technically be generated across the two Wind Energy Areas off southern New England — the largest tract of federal waters currently available for wind energy development along the Atlantic Coast.[37]

Massachusetts has taken significant actions to advance offshore wind power, which collectively have positioned the Commonwealth as a leader on this issue with two Wind Energy Areas identified by BOEM off its shores (one leased to Deepwater Wind in 2013, the second on track for auction this year) and all key approvals secured for the 468 MW *Cape Wind* project. In addition to announcing a state goal for wind energy, establishing a renewable portfolio standard, and setting limits on greenhouse gas emissions, Massachusetts requires the state's electric distribution companies to enter into long-term contracts for renewable energy — a key strategy for ensuring the financing of offshore projects with longer investment horizons.[38]

Additionally, the Massachusetts Clean Energy Center has made considerable investments in: port infrastructure for offshore wind deployment at the New Bedford Marine Commerce Terminal; research and development at the Wind Technology Testing Center in Charlestown; and key stakeholder engagement and data collection efforts helpful for the leasing process.[39] The state has approved all relevant contracts and permits for *Cape Wind*, which has also secured a lease from BOEM and a $150 million federal loan guarantee.[40] **Massachusetts has blazed the trail in America's pursuit of offshore wind power, and continued leadership is needed to capitalize on these initial investments and demonstrate a clear commitment to bringing the thousands of megawatts of available offshore wind power online.**

Rhode Island has also set national precedent in the pursuit of offshore wind power, efforts that have spurred forward the 30 MW *Block Island Wind Farm* and successful leasing by BOEM of the federal Rhode Island-Massachusetts Wind Energy Area to Deepwater Wind. The centerpiece of Rhode Island's efforts to ensure an efficient and environmentally sound offshore wind power planning process is its landmark *Ocean Special Area Management Plan* (SAMP) — a product of years of research, analysis, and stakeholder engagement to guide ocean planning decisions.[41] In 2011 the Ocean SAMP was updated to identify appropriate areas for wind energy development in both state and federal waters, which has significantly benefitted the process for permitting and leasing offshore wind power for Rhode Island. The state has also put key policies in place to ramp up clean energy, including a renewable portfolio standard, greenhouse gas emission limits, and state policy to facilitate long-term power contracts needed for renewable energy.[42] Rhode Island has approved the necessary power purchase contracts and permits for the Block Island Wind Farm.[43] **These initial successes have attracted national attention, and a continued commitment by Rhode Island's leaders to power the Ocean State with offshore wind power is needed to fully realize the clean energy potential off its shores and inspire others to follow.**

Cape Wind

Representatives from business, labor, environmental organizations, and local communities rally to support Cape Wind.

Significant Momentum

Maryland has demonstrated visionary leadership in advancing offshore wind power, including the successful passage of the 2013 *Maryland Offshore Wind Energy Act* which creates a carve-out in the state's renewable portfolio standard requiring 200 MW of the state's electricity to come from offshore wind power. The implementation of this policy is moving forward, providing critical certainty to the offshore wind industry for investment in this market and establishing an important policy model for valuing the benefits of offshore wind in state energy decisions. BOEM is moving the federal leasing process forward in Maryland, with plans to auction the state's Wind Energy Area in August 2014.[44] There is significant commercial interest in this area — which NREL has estimated could support 800-1,200 MW of offshore wind development — as demonstrated by the 16 companies that have qualified to bid in the auction.[45] Maryland also has state requirements to reduce greenhouse gas emissions and has invested significant resources into its pursuit of offshore wind power, including creating an *Offshore Wind Business Development Fund* to maximize workforce development opportunities in the state. **Thanks to the state's proactive offshore wind efforts, Maryland is poised to achieve key milestones in the development of offshore wind power — leases and contracts — in the coming year.**

Key Steps Forward

Virginia, New York, New Jersey, and **Delaware** have all taken key steps forward to pursue offshore wind power and initial progress has been achieved. Looking forward, significant state leadership is needed to build on these efforts and ensure that offshore wind plays a major role in the state's energy future.

Virginia achieved a key milestone in 2013 with BOEM's successful leasing of the VA Wind Energy Area to Dominion Virginia Power, the state's largest utility which is also advancing a pilot project with DOE funding and pursuing a research lease in federal waters. In 2010, the state established the *Virginia Offshore Wind Development Authority* and has allocated significant funding to facilitate and advance offshore wind development, including key surveys and research. In 2014, Governor McAuliffe signed an Executive Order to establish a Virginia Energy Council which listed accelerating offshore wind development among the stated objectives.[46]

New York has created a significant market opportunity for offshore wind power through the Long Island Power Authority, which in 2013 announced a request for proposals for 280 MW of new renewable energy generation. The state has also taken proactive steps to explore offshore wind power, including directly advancing the New York Power Authority-led collaborative project proposal (with Long Island Power Authority and ConEd) for a 350-700 MW offshore wind project in federal waters off of New York City. Due to additional commercial interest in the proposed project site, BOEM has launched a Wind Energy Area identification process which is on track for a competitive auction in 2015. New York has also invested considerable resources into offshore wind research, including a 2013 *NY Offshore Atlantic Ocean Planning Study* by the New York Department of State and studies currently underway at the New York State Energy Research and Development Authority into the potential environmental and economic impacts of offshore wind power for New York. The state has a renewable energy portfolio standard, a carbon emissions reduction goal, and participates in the Regional Greenhouse Gas Initiative.[47]

New Jersey passed a precedent-setting state policy in 2010 to incentivize at least 1,100 MW of offshore wind development through the state's renewable portfolio standard, which if implemented could provide much-needed market certainty for a substantial amount of offshore wind power. BOEM has finalized a Wind Energy Area for New Jersey, which NREL has estimated could support as much as 3,400 MW of offshore wind development, and has announced plans to auction leases there in 2014. The 30 MW *Atlantic City Windfarm* proposal has received state development permits and two rounds of funding from DOE, although it has not successfully secured approval from New Jersey's Board of Public Utilities to move forward.[48]

Delaware was an early offshore wind leader, approving the nation's first power purchase agreement (PPA) for offshore wind power in 2008 with NRG Bluewater, who proceeded to secure a lease from BOEM for Delaware's Wind Energy Area. The company currently holds this lease, although the project is on hold and the PPA has since expired. Delaware has a renewable energy portfolio standard, with an increased incentive for offshore wind power purchased from projects sited off the Delaware coast by May 2017, and participates in the Regional Greenhouse Gas Initiative.[49]

Initial Activities Underway

The following states have offshore wind research and preliminary planning activities underway:

Maine: Today's commercial offshore wind energy projects are built in relatively shallow water where foundations fixed to the sea floor are possible. Maine, like so many places around the globe, has vast offshore wind power generation potential in waters that would require the use of floating turbine foundations. The University of Maine is a leader in the research and development of floating turbine technology, with support from DOE and private partners for two demonstration projects: *VolturnUS*, a small scale model turbine launched in 2013 as the first grid-connected offshore wind turbine in America and *Aqua Ventus*, a 12 MW pilot project. In January 2014, the Maine Board of Public Utilities approved the initial terms for a contract to be negotiated with Central Maine Power to buy the power from the *Aqua Ventus* project.[50]

North Carolina: BOEM has begun the process to identify Wind Energy Areas for leasing off North Carolina. Significant offshore wind research has been done for North Carolina, including a 2009 feasibility study by UNC Chapel Hill as well as studies of the state's offshore wind resource, seafloor mapping, fishing communities, and transmission and grid integration needs. In 2011, a Governor's Scientific Advisory Panel on Offshore Energy concluded that offshore wind is a significant opportunity for the state and in 2013 Governor Pat McCrory (R) wrote a letter to BOEM stating that an "energy plan that includes wind is vital to a prosperous energy future in North Carolina."[51]

South Carolina has a state Regulatory Task Force for Coastal Clean Energy and in 2008 released a report on South Carolina's role in offshore wind energy development. BOEM has initiated planning efforts for South Carolina through an Intergovernmental Renewable Energy Task Force. In 2014 the state legislature passed a resolution to recognize and encourage the pursuit of the state's offshore wind resource. Similar statements of support for offshore wind power have been expressed by the cities of Charleston, North Charleston, and North Myrtle Beach. Significant research into wind technology is occurring at Clemson University's Wind Turbine Testing Facility.[52]

Georgia: Southern Company — one of the nation's largest utilities — has partnered with Georgia Tech to study offshore wind since 2005, and in 2013 applied to BOEM for a research lease to collect data on the wind resource available off the coast of Tybee Island.[53] Georgia's Environmental Finance Authority facilitates the Georgia Wind Working Group, which includes a focus on offshore wind, and the Department of Natural Resources is engaged in ocean mapping via the Georgia Coastal and Marine Portal (GCAMP) to plan for offshore wind and other ocean uses.[54]

States to Watch

While there are no active efforts currently underway in pursuit of offshore wind power in the following states, each has unique opportunities that could be leveraged to make progress off their or adjacent shores:

New Hampshire is not actively engaged in a formal process with the federal government to explore offshore wind development off its shores, although the state could play an important role in advancing the market in New England by committing to purchase offshore wind power that would deliver economic and environmental benefits to the region. The state legislature recently passed a bill creating a committee to study offshore wind power and present recommendations back to the Legislature and Governor by November 2014, offering a venue for exploring this opportunity.[55]

Connecticut could also play a major role in bringing offshore wind power online through regional coordination, given the state's significant energy market and proximity to areas offshore southern New England and New York. While the state does not have an active process underway to explore wind energy development, Connecticut could greatly benefit from the price suppression benefits and economic development opportunities resulting from scaling up offshore wind power development in the region.

Florida is currently exploring marine hydrokinetic energy, but there are no active plans to pursue offshore wind power development.[56]

RECOMMENDATIONS

The immense vision and leadership of key state and federal leaders, committed industry players, and engaged stakeholders has brought the U.S. closer than ever before to reaching the new clean energy frontier of offshore wind power. While getting just one project into the water will serve as an important national precedent, a pipeline of projects under development — measured in *thousands* of megawatts — is needed to provide the long-term market certainty required to launch an American offshore wind industry at scale that can reduce costs and deliver the environmental and economic benefits already evident overseas. State leadership is essential to create the favorable policy and political environment necessary to seize this opportunity and spur the responsible development of offshore wind power off our shores.

National Wildlife Federation and our national, state, and local partners call on Atlantic Coast state leaders to:

1. **Set a bold goal for offshore wind power in the state's energy plan** in order to provide clear vision and commitment to ensure offshore wind power plays a major role in the state's energy future. As states move forward with strategies to implement EPA's Clean Power Plan, offshore wind power offers a unique and scalable pollution-free power source for meeting local carbon emission reduction targets.

2. **Take action to ensure a competitive market for offshore wind power,** including advancing policies that: specifically facilitate offshore wind power contracts; prioritize deployment of renewable energy; reduce greenhouse gas emissions across the electricity sector; and facilitate regional market building opportunities. States can also ensure their Congressional delegations help advance offshore wind power by supporting federal incentives — such as an Investment Tax Credit — critical for providing long-term market certainty needed to unleash private investment.

3. **Advance power contracts for offshore wind projects** by facilitating and approving power purchase agreements and/or rate recovery proposals needed to move offshore wind projects from the planning stages to reality. State leadership is essential for facilitating investment in offshore wind power and jumpstarting the markets for this emerging industry, including pursuing regional opportunities for procurement of offshore wind power.

4. **Ensure an efficient, transparent, and environmentally responsible offshore wind leasing process that protects wildlife** by engaging with the federal Bureau of Ocean Energy Management and key stakeholders to advance a federal leasing process that requires all offshore wind power projects to be sited, constructed, and operated responsibly with specific attention to protected and vulnerable species. While the federal government is responsible for issuing leases for offshore wind development in federal waters, state governments have a significant role to play through direct engagement with BOEM and proactive initiatives to collect necessary data and stakeholder and expert input to guide planning decisions. Offshore wind development must be coordinated with federal, state, tribal, and regional coastal and marine spatial planning efforts, consistent with the goals of the National Ocean Policy.

5. **Invest in key research, initiatives, and infrastructure needed to spur offshore wind development,** including: efforts to increase baseline and site-specific wind resource, environmental, and ocean use data offshore; expert and stakeholder engagement initiatives; studies and initiatives to maximize local economic development opportunities; and direct investments to support key local infrastructure — such as upgrades to port facilities or transmission systems — needed to deploy offshore wind development off our shores.

London Array Limited

With new, bold action from state leaders along the coast, America can build on the progress we've made and seize the golden opportunity of offshore wind power to usher in a clean energy future.

National Wildlife Federation works with a broad coalition of national, state, and local organizations calling for responsibly developed offshore wind power. For more information about offshore wind power and ways to get involved, visit:

www.nwf.org/offshorewind

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