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The Class of 1964 Policy Research Shop

SHIFTING WINDS: WIND FARM SITING PROCESSES IN NEW YORK, NEW HAMPSHIRE, AND MAINE

A Comprehensive Analysis

Presented to the Vermont House Committee on Natural Resources, Fish, and Wildlife

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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

The Vermont State Legislature is currently considering changes to siting processes for grid-scale wind farms. This research paper aims to inform deliberations of the state legislature by providing an overview of the wind farm approval processes in the states of New York, New Hampshire, and Maine. The paper begins with a general overview regarding the wind farm approval process in the state of Vermont and presents the issues to be discussed. The paper also discusses the research design and provides justification for examining the states of New York, New Hampshire, and Maine. For each state, a general overview of the role that wind energy plays in meeting the electrical needs of the state is presented. In addition, an overview of the state's general approval process for wind energy is given, along with the environmental regulations that affect the approval of new wind farms. Further discussion of the parties to the overall approval process is included for each state, including public-sector actors like regulatory agencies and commissions, advocacy groups that support the development of new wind farms, as well as private-sector firms that construct new wind farms. The paper closes with a general summary regarding overall findings and presents some policy options for the Vermont State Legislature to consider in its deliberations regarding the future of siting processes for grid-scale wind farms.

2. OVERVIEW

Climate change presents a unique challenge to the state of Vermont. A study conducted by the Vermont Department of Health found that several changes to Vermont's climate–including a seven-inch increase in annual precipitation over the past 50 years, as well as rises in average winter and summer temperatures–can be attributed to climate change.[1] In order to mitigate these impending changes, the state of Vermont hopes to obtain 90 percent of all its energy from renewable resources by 2050.[2] One way of meeting these goals would be to increase the overall percentage of power generated via wind power. Although there are costs associated with extracting the raw materials used for constructing wind turbines, the actual generation of electricity from wind power is far less impactful to the environment than conventional energy sources.

There are also drawbacks to wind power. Common complaints about wind farms include the noise generated by spinning rotors, their potential threat to avian wildlife and the environment, as well as their effects on the aesthetics of a given landscape. Similarly, there are challenges associated with storing the electricity generated from wind power. Wind power is highly intermittent. The amount of electricity generated from a wind turbine can fluctuate significantly from day to day. At times, electricity generated can be greater than existing demand, thus requiring the development of a successful storage system to store excess electricity for use when demand exceeds current generation.

The state of Vermont currently has five major wind farms. These include the Searsburg project, the Sheffield project, the Lowell Mountain wind farm, the Deerfield wind farm, and the Georgia Mountain wind farm.[3] There is currently a total of 149 megawatts of installed wind farm capacity in the state of Vermont.[4] About 18 percent of total energy usage in the state comes from wind power.[5]

The siting of wind farms has historically been a contentious issue in the state of Vermont. In 2017, a wind farm developer named Swanton Wind withdrew its application for siting a new wind farm, complaining about an unfavorable political climate towards the development of new projects in Vermont.[6] The Lowell Mountain Wind Farm, constructed in 2012, also faced significant opposition from residents living near the mountain.[7] Residents in the towns of Albany and Craftsbury, along with a citizens group called the Lowell Mountain Group, appealed the decision of the Public Utilities Commission to permit the construction of the wind farm to the Vermont Supreme Court. The appeal ultimately failed; the permits were upheld by the Vermont Supreme Court.[8] These conflicts have raised a number of concerns regarding the siting process for new wind farms, including how the concerns of local communities about wind farms should be incorporated into siting processes at the state level. This report attempts to answer this and other questions by presenting information regarding the siting process for wind farms in other states, including New York, New Hampshire, and Maine.

3. BACKGROUND

There are currently two siting processes for wind farms in the state of Vermont. These processes include the Section 248 process and the Act 250 process.[9] Wind farms that receive a Certificate of Public Good, which means that the firm is deemed to serve the general good of the state of Vermont, are sited under the Section 248 process.[10] Wind farms that do not receive such a certificate are sited under the Act 250 Process.[11]

A test composed of ten criteria is used to assess whether or not a new wind farm project is eligible for a Certificate of Public Good, which is issued by the Vermont Public Utilities Commission.[12] The Public Utilities Commission is composed of three individuals appointed by the Governor of Vermont.[13] The criteria evaluate how a project affects the overall development of the area in which the wind farm is to be sited, satisfies demand for the service provided, economically benefits the overall state of Vermont, and complies with a variety of regulations governing historical sites, the environment, as well as public health.

Following the receipt of a Certificate of a Public Good, the project developer files construction plans with municipal and regional planning commissions. A hearing is held

with the Public Utilities Commission, which has the power to approve or reject an application.[14] Parties automatically included in the hearings with the Public Utilities Commission include the Department of Public Service, the applicant, and the Vermont Agency of Natural Resources.[15] Others, like community groups and individual citizens, may apply for intervenor status. All appeals of decisions by the Public Utilities Commission are made to the Vermont Supreme Court.[16]

Under the Act 250 process, a developer must first obtain a land use permit from one of nine district environmental commissions that administer the act. These district commissions are composed of three individuals, including one chair and two members, as well as up to four alternates for the entire commission.[17] Parties to a hearing include the applicant, the municipality and its planning commissions, the regional planning commission as well as affected state agencies.[18] All appeals are made to the Vermont Environmental Judiciary, which can then be appealed to the Vermont Supreme Court.[19]

In Vermont, there have been several new initiatives attempting to change the siting process for wind farms. The Bill H.467 is currently being considered by the Vermont House Committee Natural Resources, Fish, and Wildlife. If passed, the bill would place the siting of grid-scale wind developments under Act 250, rather than under the separate process of Section 248.[20] There have also been new regulations placed on wind farms. The Vermont Public Utilities Commission recently issued a mandate establishing a maximum daytime noise emission level of 42 decibels and a nighttime limit of 39 decibels.[21] It also proposed a setback standard of ten times the height of a turbine, which could severely restrict the development of new wind farms.[22] Appendix A provides information regarding current and proposed wind farms in the state of Vermont.

4. COMPARISON STATES

The states examined below include New York, New Hampshire, and Maine. The research focuses on the siting of land-based wind farms, as opposed to offshore wind farms.

Since 2009, the state of New York has been a member of the "Gigawatt Club," which describes states that have wind power generation capacity in excess of 1,000 megawatts.[23] The state of New York has extensive wind farm developments and substantial governmental processes and structures in place to regulate the overall development and siting of new wind farms. The geographical features of the state, including extensive mountain ranges like the Catskill Mountains and the Adirondacks, also mirror many of the mountainous areas in Vermont. Given these geographical and political features, along with the extensive development of wind energy within the state, examining wind farm siting in

New York would be highly informative for current deliberations regarding wind energy in the state of Vermont.

The state of Maine also has a highly developed wind industry, with over 20 percent of the energy needs of the state coming from wind energy.[24] As a large state with extensive experience siting wind farms, the state of Maine would also be highly informative as a comparison for the process of wind farm siting.

In many respects, the state of New Hampshire can be considered a sister state with Vermont. With similar geographical features, similar demographics, and close proximity to Vermont, New Hampshire is also an excellent state to examine.

For each of these three states, this paper discusses the overall approval process for industrial-scale wind farms, the state agencies and commissions that have a voice in the approval process, along with activist groups fighting for or against wind farms and wind farm developers. This paper further provides commentary regarding the collection of fees for applications in each of these states. Research is drawn from a review of laws and regulations governing wind farm siting in each of these states, websites and articles written by stakeholders in the approval process, and testimony from stakeholders.

5. NEW YORK

Wind power is a growing source of energy in the state of New York. Currently ranked eleventh in the nation for installed wind generation capacity, New York has twenty wind energy projects operating with a total capacity of over 1,812 megawatts, along with three additional wind farms currently under construction or in the planning phase.[25] Beyond the current initiatives regarding the construction of new wind farms, there are also several ongoing projects focused on the development of offshore wind farms.

In the state of New York, the siting of all wind projects less than 25 megawatts is subject to applicable state and local laws or regulations, possibly including the State Environmental Quality Review Act.[26] In the event that a given project is found to impact the environment in a way that will require an environmental permit, one must enter the Department of Environmental Conservation environmental review process. Projects that are deemed to have a significant adverse environmental impact are required to write an Environmental Impact Statement.

All wind facilities that produce more than 25 megawatts of electricity are considered grid-scale developments and sited under the Article 10 process. The siting of grid-level farms

is regulated by the New York State Board on Electric Generation Siting and the Environment.

5.1 The Wind Farm Approval Process in the State of New York

All applications to construct non-grid scale wind farm developments are submitted to one of the Regional Permit administrators of the New York Department of Environmental Protection. A new wind farm project begins this process by submitting a department application form, location map, project plans, and relevant applications for permits to the New York Department of Environmental Conservation.[27]

Projects that are deemed to have a significant adverse impact are required to write an Environmental Impact Statement, which provides a description of the proposed project, an evaluation of the environmental impacts of the project, as well as mitigation measures to minimize these impacts.[28] This statement is subject to a public commenting period, after which a Final Environmental Impact Statement is issued. The Final Environmental Impact Statement addresses concerns presented by the general public, incorporates them into the document, and further reviews environmental mitigation measures.[29] After the issuing of a final Environmental Impact Statement, an agency can either approve the project, approve the project provided it implements certain mitigation measures, or outright deny the project.[30]

Grid-scale wind farms, or wind farms that produce more than 25 megawatts of electricity, are sited under the Article 10 process. Under Article 10, a wind farm developer starts the process by filing a Public Involvement Program plan with the New York Siting Board.[31] This plan must include information regarding how the developer plans to consult with affected agencies and stakeholders. It should further outline the activities that will be used to encourage stakeholder participation, educate the public about the specific proposal and the Article 10 review process, and encourage participation by stakeholders in the certification and compliance process.[32]

Throughout the pre-application process, the wind farm developer is expected to communicate extensively with the affected communities. Communications can take the form of distributing flyers to the community, holding town halls, or establishing a website to educate the general public about the proposed project.[33]

Following the submission of the Public Involvement Plan, the developer must wait at least 150 days before filing a Preliminary Scoping Statement. The Preliminary Scoping Statement outlines the scope and methodology of the studies used to gather information needed for the Article 10 application.[34] The Preliminary Scoping Statement also discusses

how the wind farm developer intends to engage the public and obtain information for its Article 10 application. A public commenting period for the Preliminary Scoping Statement is also provided.

Following the filing of the Preliminary Scoping Statement, the developer meets with stakeholders to discuss the sufficiency of its proposed studies. In the event that there are still questions about the information gathering process, the developer and the relevant stakeholder may choose to sign stipulations, or agreements between parties regarding how the study is to be performed.[35] Within 60 days of the filing of a Preliminary Scoping Statement, the developer is required to convene a meeting of interested parties in order to initiate the overall stipulation process.[36] There must be a public commenting period on the proposed stipulation.[37]

After the completion of all relevant studies regarding the impact of the project on affected communities, the developer files its formal Article 10 application. The siting board conducts hearings and accepts evidence and testimony regarding the proposal. There are three types of parties to these hearings: automatic statutory parties, individuals or organizations that have a right to be a party by giving notice, and parties that may be permitted to join provided they receive approval.[38] Automatic statutory organizations are bodies that are automatically included in the hearings. These organizations include the Departments of Environmental Conservation, Economic Development, Health, Agriculture and Markets, and State; the New York State Energy Research and Development Authority; the Office of Parks, Recreation and Historic Preservation; and in certain instances, the Adirondack Park Agency.[39] Provided that an appropriate notice is filed within 45 days of the application, the affected municipality, any individual resident of the affected community, and any non-profit organization can also become a party.[40] Rather than obtaining permits, an applicant resolves all environmental and scenic issues through the Article 10 process.

After hearings are completed, the siting board can issue one of three types of decisions: it can grant a certificate as requested by the applicant, it can grant a certificate provided the applicant follows certain conditions, or the board can outright deny the application.[41] When issuing a decision, the siting board must describe the nature of the environmental impacts of the facility, its effects on the overall electrical generation capacity, and certify that adverse environmental effects from the facilities are minimized.[42] In the event that the project is approved, the board must certify that the facility follows relevant state and local laws and regulations regarding the environment, public health, and safety.

After rendering the decision, the Siting Board ceases to play a role in the overall wind farm approval process under Article 10.[43] The New York State Department of Public Service is

responsible for enforcing the decision and its relevant conditions throughout the wind farm development process.[44]

5.2 Regulations on Wind Farms in New York

There are various regulations that affect wind farm siting, including those that concern the effects of wind farms on freshwater wetlands, the effect of a development on bodies of water, the protection of endangered species, as well as storm water discharges from construction activity. The Department of Environmental Conservation is responsible for enforcing these permits. Under the Article 10 approval process, these are areas likely to be brought up in hearings as regulatory obstacles that a proposed wind farm must overcome.

5.2.1 Protection of Wetlands

In New York, there are four classes of wetlands: Class 1, 2, 3, and 4. Class 1 wetlands are the most valuable and subject to the most stringent standards.[45] Under the Freshwater Wetlands Act, all protected wetlands are mapped out by the Department of Environmental Conservation. Almost any activity that may adversely impact the natural values of the wetlands or their adjacent areas is regulated. Activities that may require a permit include the construction of buildings; the placement of fill, excavation, or grading; or the modification or restoration of existing structures. [46] Although a grid scale wind farm does not need to apply for such a permit, developers must nonetheless consider the effects of a proposed wind development on wetlands.

5.2.2 Use and Protection of Waters

The New York State Department of Environmental Conservation created the Protection of Waters Regulatory Program to prevent the pollution of water bodies. A Protection of Waters Permit is required for disturbing the bed or banks of a stream that is used as a source of drinking water, used for swimming and other recreation, supports fisheries, or other activities that do not directly contact the stream. [47] Activities that may trigger the requirement of a Protection of Waters permit include stream disturbance, excavation and fill in navigable waters, the use of dams and related impoundment structures, as well as docks, moorings, or platforms.[48] This environmental permit can also impact wind farms that may be sited on or near rivers and streams. Although a grid scale wind farm does not need to apply for such permits, developers must nonetheless consider the effects of a proposed wind development on bodies of water.

5.2.3 Coastal Erosion Management Permit Program

The Coastal Erosion Management Permit Program regulates any activities that materially alters the condition of coastal land.[49] Permits may be issued if activities affecting erosion are reasonable and necessary or are not likely to cause a measurable increase in erosion. Permits may also be issued if the development minimizes damaging impacts to natural protective features, existing erosion protection structures, and fish and wildlife habitats.[50] Although grid-scale projects do not need to apply for such permits, they must still consider the impact of the development on coastlines.

5.2.4 Protection of Endangered and Threatened Species

The New York Department of Environmental Conservation aims to minimize the impact of new projects on species listed as threatened or endangered. In order to trigger the permit requirement, a proposed activity must either be likely to result in the harm of an animal of a given species or adversely modify an occupied habitat. [51] The Department of Environmental Conservation determines whether a given area is an occupied habitat based on whether there are reports of a protected species engaging in essential behaviors like breeding, hibernation, reproduction, movement, or overwintering in the specified location.[52] Once a habitat is verified to be occupied by a protected species, the location is assumed to remain occupied until there have been surveys confirming the species is no longer present. Components of an application for this permit include a full description of the proposed project, an assessment of efforts made to avoid or minimize impacts to listed species, an assessment of the extent of impacts to listed species or their habitats, along with an endangered species mitigation plan.[53]

5.2.5 Effect of Wind Farms on Bird and Avian Species

Wind farms may potentially have an adverse impact on the travel or migration of birds and bat species. The New York Department of Environmental Conservation requires many wind farms to conduct studies of the potential adverse impact of their facilities on avian species. The study area for these avian species generally encompasses the entire land and air space within the project area, and at least five miles outside of the edge of the project area.[54] Depending on the condition and landscape of the project area, this study area can be extended up to fifteen miles from the site of the wind farm.[55] Wind farms are also required to engage in post-construction studies on the actual impacts of the wind farm to birds and bats.[56] These studies are generally conducted via ground searches for bird and bat carcasses.[57] Depending on the nature of the impact of the wind farm on these bird species, a wind farm may be required to engage in relevant mitigation measures. Such studies are required of both grid-scale and non-grid scale wind developments.

5.3 Parties to the Wind Farm Approval Process in New York

Important parties to the wind farm approval process include the New York State Board on Electric Generation Siting and the Environment, local planning and zoning boards, the Department of Environmental Conservation, the New York State Energy Research and Development Authority, as well as activist groups fighting to promote the development of new wind farms. There are also local activist organizations that form to protest specific wind farm developments.

5.3.1 New York State Board on Electric Generation Siting and the Environment

The New York State Board on Electric Generation Siting and the Environment is an adjudicatory body that handles the siting of all power generating facilities generating more than 25 megawatts.[58] Individuals on the board include the Chair of the Department of Public Service, who serves as the chair of the siting board; the Commissioner of the Department of Environmental Conservation, the CEO of Empire State Development, and the Commissioner of the New York Department of Health.[59] There must also be two public members added to the commission, both of whom must reside within the municipality in which the facility is proposed to be located.[60] One of these public members is appointed by the President Pro Tempore of the Senate and one is appointed by the Speaker of the New York Assembly.[61]

5.3.2 Local Planning and Zoning Boards

Local planning and zoning boards are adjudicatory bodies that approve the siting of new facilities and projects. Individuals on these bodies are generally appointed from the municipality or community in which they live. Members of planning boards and zoning board of appeals are required by state statute to obtain four hours of training per year, and typically have real estate-related experience.[62] In the state of New York, local planning and zoning boards can create ordinances regarding the siting of new wind facilities. Setbacks for the distance between wind turbines and other residences are typically regulated at the local level, along with height restrictions, minimum heights for blade tips above ground level, sound regulations, and regulations concerning aesthetics.[63] However, it should be noted that many municipalities do not have adequate resources to fully evaluate wind farm potential.[64] Many towns and villages in rural parts of New York do not have any zoning ordinances, meaning that wind energy developers in such areas can bypass engagement processes with municipal-level stakeholders.[65]

5.3.3 Department of Environmental Conservation

The Department of Environmental Conservation is the state regulatory agency for all environmental issues in the state of New York.[66] It provides key permits, licenses, and registrations to businesses, government agencies, and individuals for activities that impact the environment.[67] As a statutory member of the New York State Board on Electric Generation Siting and the Environment, an enforcer of the State Environmental Quality Review Act, and the issuer of many permits and licenses concerning wind farm siting, the Department of Environmental Conservation has a major say in the siting of all power generating facilities in the state of New York.

5.3.4 New York State Energy Research and Development Authority

The New York State Energy Research and Development Authority (NYSERDA) advances innovative energy solutions for the state of New York.[68] This organization is a public benefit corporation, meaning that it allows for public benefit to be a charter purpose in addition to the traditional goal of profit maximization for shareholders.[69] Its initiatives are focused in four key areas: market development for renewable energy, supporting the New York Sun Initiative, supporting the New York Green Bank, and engaging in innovation and research.[70] The goal of the New York Sun Initiative is to make solar power affordable for all residents in the state of New York via incentives and financing for solar-generated electricity.[71] The New York Green Bank, meanwhile, works collaboratively with the private sector to increase investments into clean energy markets in the state.[72]

The board of NYSERDA is composed of 13 members, including the Commissioner of the Department of Transportation, the Commissioner of the Department of Environmental Conservation, the Chair of the Public Service Commission, and the President and CEO of the Power Authority of the State of New York.[73] The remaining members are appointed by the Governor and confirmed by the Senate.[74] These members must be composed of "an engineer or research scientist, an economist, an environmentalist, a consumer advocate, an officer of a gas utility, an officer of an electric utility, and three at-large members."[75]

5.3.5 Office of Parks, Recreation, and Historic Preservation

The office of Parks, Recreation, and Historic Preservation is responsible for protecting all valuable natural, historic, and cultural resources in the state of New York. This agency generally plays a role in wind farm siting when a proposed wind farm either impacts sites of historic significance or is located or may negatively impact a state park in New York.

5.3.6 Activist Groups Promoting Wind Energy

In the state of New York, there are a variety of environmental activist groups that promote renewable energy. These activist groups include the New York Energy Democracy Alliance, a statewide alliance of community-based organizations, grassroots groups, and policy experts, as well as organizations like the Alliance for Clean Energy New York and New York Renews. The state of New York itself is also very much in favor of renewable energy. In his 2019 agenda, Governor Andrew Cuomo called for doubling total power generated by solar energy by 2025 and nearly quadrupling offshore wind power by 2035.[76] His goal is to make New York carbon-neutral by 2050.[77]

5.3.7 Wind Farm Developers

There are a variety of wind farm construction firms based in the state of New York. Among the largest wind farms in the state of New York include the Wethersfield Wind Farm and the Maple Ridge Wind Farm. With an installed capacity of over 300 megawatts, Maple Ridge Wind farm has the ability to power over 140,000 New York homes every year.[78] A wind energy developer called EDP Renewables is particularly active in the state of New York. EDP Renewables is the fourth largest wind energy developer in the world, with projects completed in 14 countries.[79] EDP Renewables also operates several other large wind farms in New York, including the Marble River Wind Farm, the Arkwright Summit Wind Farm, and the Jericho Rise Wind Farm.[80]

A wind energy firm called Invenergy also owns several wind farms throughout the state of New York. These include Sheldon Wind Farm, which generates about 112.5 megawatts; Orangeville Wind Farm, which generates 94 megawatts; and Marsh Hill Wind Farm, which generates 16.2 megawatts.[81]

5.4 Application Fees

During the pre-application phase, all grid-scale projects must pay $350 per megawatt of generating capacity into the New York Intervenor Fund, which aims to ensure that any interested local parties or municipalities can contribute to proceedings regarding the siting of a new wind farm.[82] Half of all Intervenor Funds must be available for municipal parties, and half of all funds must be available for local parties to hire expert witnesses, consultants, or lawyers.[83] The total amount paid is not to exceed $200,000 per project.[84] During the application phase, each project application must be accompanied by a fee of $1,000 per megawatt of capacity into the fund, with the total not to exceed $400,000.[85]

5.5 Storage of Electricity Generated from Wind Energy

As with many other states, New York faces major challenges in developing storage methods for excess electricity generated by renewable energy. Such excess is created when electricity generated by wind developments exceeds demand for electricity. In order to prevent the electrical grid from being overwhelmed with electricity, operators may temporarily turn off wind developments, thus resulting in some wind capacity being wasted.[86] To improve the overall efficiency of renewable energy, it is vital that effective battery systems be developed.

The New York state government has taken steps to increase battery storage capacity for its renewable energy developments. In 2018, Governor Cuomo announced a goal to construct 1,500 megawatts of energy storage capacity by the year 2025 and 3,000 megawatts by 2030.[87] In line with this goal, the New York State Energy Research and Development Authority, along with the New York Department of Public Service and the Public Service Commission, designed several plans outlining new policies, regulations, and initiatives to meet this goal. These orders authorized a total of $350 million in new incentives to accelerate the energy storage market.[88] They also included directions for the six investor-owned utilities in New York to hold bidding processes for contracts to develop energy storage units holding a minimum of 350 megawatts.[89]

As of the end of 2019, the state of New York had approximately 50 megawatts of storage capacity for renewable energy.[90] This capacity is projected to rapidly increase in coming years. The firm Con Edison plans to complete a major storage facility capable of holding at least 300 megawatts by the end of 2022.[91] New York is also currently working on an air quality rule that would push certain carbon-dioxide emitting power plants to switch to cleaner technology like battery storage for electricity generated by renewable energy.[92] The Ravenswood Generating Station in the Queens borough of New York City has also recently received permission from state regulators to replace 16 of its combustion turbines with a storage facility capable of holding up to 316 megawatts of electricity.[93]

Most existing battery storage systems use a lithium-ion battery. They release their stored electricity when charged lithium atoms flow through a liquid contained in the battery.[94] Although lithium-ion batteries are very widely used, they are not the most cost-effective solution for storing electricity generated by utility-scale developments. Lithium-ion batteries are highly toxic and are notorious for exploding.[95] In addition, lithium as a mineral is incredibly expensive. Research into more effective battery storage systems is ongoing.

6. MAINE

The state of Maine is ranked eleventh nationally in overall wind power capacity, and first in the New England area.[96] Unlike the states of New Hampshire and New York, Maine defines grid-scale wind energy developments as any wind farm that creates more than three acres of impervious area.[97] Wind farms that are not of grid-scale are sited under the Natural Resource Protection Act.[98] If a grid-scale wind farm is sited in an Expedited Permitting Area, its permitting falls under the Maine Wind Energy Act.[99] If a grid-scale wind farm is not sited in such an area, it is sited under the Site Location of Development Act.[100] The state also provides a Model Wind Facilities Ordinance as a resource for municipalities to use when designing wind farm ordinances.[101]

6.1 The Wind Farm Approval Process in the State of Maine

Laws outlining the wind farm siting process in the state of Maine include the Natural Resource Protection Act, the Site Location of Development Act, and the Maine Wind Energy Act.

6.1.1 Natural Resource Protection Act

The Natural Resource Protection Act enforces several permits relating to activities that may impact the environment in the state of Maine, such as rivers and streams, ponds, freshwater wetlands, wildlife habitats, and coastal wetlands.[102] Non-grid scale wind farms are sited under the Natural Resource Protection Act. In order to receive a permit to site the wind farm under this Act, a small-scale wind farm must meet requirements of noise control rules adopted by the Department of Environmental Conservation in Maine, avoid unreasonable adverse shadow flicker effects, and be constructed with setbacks adequate to protect public safety.[103] The wind farm must further implement mitigation techniques to endangered and threatened species, essential wildlife habitat, and other protected resources.[104]

6.1.2 Site Location of Development Act

The Site Location of Development Act regulates developments that may have a substantial effect on the environment. All wind farms that are not located within an expedited permitting area and are deemed as grid-scale, or create more than three acres of impervious area, trigger the threshold for a Site Location of Development Act permit.[105] In order for an application to be approved for the Site Location of Development permit, the applicant should provide the details of the project, provide proof of a lease of property, and demonstrate financial capacity and technical ability to successfully complete the project.[106]

There is an extensive set of environmental rules and regulations that a new project needs to satisfy under the Site Location of Development Act before the wind farm project can be approved. Some of these regulations include the Significant Groundwater Wells regulation, which considers the development's impact on groundwater; the Financial Capacity Standard, which considers the developer's financial capacity in constructing the development; and the No Adverse Environmental Effect Standard, which considers the overall environmental impact of the wind development.[107]

The application process under the Site Location of Development Act begins with a pre-application meeting between the Department of Environmental Protection (DEP) staff and the wind farm developer, where the applicant and DEP staff discuss particular areas of concern relating to the wind farm development. A public meeting providing information about the project is also required. A pre-submission meeting is also required for all projects for which a pre-application meeting was held unless waived in writing by the Department of Environmental Protection.[108]

Public notice of the application must be provided via newspaper.[109] Fees must also be attached to the application, and the application should be sent out well in advance of the date of construction.[110] The application may include studies relating to the impacts of the project on soil, storm water patterns, wildlife, potential noise pollution, impacts on wildlife, and its financing plans.[111] The application also needs to provide relevant mitigation plans.

Upon submission and payment of fees, the application is assigned to a project manager who determines if the application is complete and acceptable.[112] Once review is complete, the application receives a notification. The project manager then makes a recommendation based on their review of the application, including site visits, comments received from staff, other agencies or the public.[113] Depending on the nature of the development, a final decision on the application may be made either by the Commissioner or the Board of Environmental Protection. A draft copy of all findings is made available for review by all interested parties at least five days prior to the final action by the commissioner, or 15 days prior to final action by the board.[114]

If acceptable, the manager may request that the application be sent to other applicable review agencies.[115] Once a final decision is made and an application is approved, a permit is sent, and with it may come conditions placed on the specific project. Failure to comply with these conditions may lead to fines or permit revocation. A decision may be appealed within 30 days following a decision.[116]

Wind energy developments governed by the Site Location of Development Act are required to demonstrate that they do not have an unreasonable and adverse effect on the

environment. When making such an evaluation, the Department of Environmental Protection evaluates the effect of the wind energy development on factors like storm water runoff, natural habitats of wildlife and fish, as well as bodies of water.

The state of Maine also enforces several rules and regulations for sound emitted by grid-scale wind energy projects. Sound levels from operation of a wind energy development are not permitted to exceed a daytime limit of 55 decibels between 7:00 AM and 7:00 PM, and a nighttime limit of 42 decibels between 7:00 PM and 7:00 AM at any protected location.[117] These sound requirements also apply to wind energy developments sited under the Maine Wind Energy Act.

6.1.3 The Maine Wind Energy Act

In 2003, the Maine legislature created the Maine Wind Energy Act to encourage the development of new wind energy projects. Passed in 2008, the law aimed to install at least 2,000 megawatts of wind farm capacity by 2015, and 3,000 megawatts by 2020.[118] The Maine Wind Energy Act further designates certain areas within the state as Expedited Permitting Areas, or more appropriate for grid-scale wind energy developments.[119] These areas include all organized towns in Maine, as well as a number of unorganized and de-organized areas within the state. If a proposed project is within an Expedited Permitting Area, then the review standards of the Maine Wind Energy Act are applied, and the Site Location of Development Act is not applied.[120] If a proposed project is outside an Expedited Permitting Area, then the Site Location of Development Act is applied, and the Maine Wind Energy Act is not applied.[121] The Maine Wind Energy Act also only applies to grid-scale wind energy developments. Appendix B contains a map showing all areas in Maine that are considered Expedited Permitting Areas.

The Expedited Permitting Process gives less weight to the impact of a wind farm on scenic views and features fewer avenues for appeal. Under the Wind Energy Act, visual impact studies can only be conducted within eight horizontal miles from a wind development.[122] These visual impact assessments must consider impacts on scenic areas or landscapes in the state, the existing character of the surrounding area, viewer expectation regarding the original landscape, and the overall impact of the wind farm on enjoyment of the surrounding scenery.[123] Before the passage of the law in 2008, an applicant had to demonstrate that the wind farm development would fit harmoniously into the existing natural environment, a very difficult regulatory hurdle for wind farm projects that feature tall turbines.[124] There have been some initiatives to extend the visual impact study survey area to about 40 miles, though such initiatives have not been successful.[125] A change in the law in 2015 also allowed communities to opt out of expedited permitting review. Since this

change, approximately 750,000 acres of land have been removed from the total Expedited Permitting Area in Maine.[126]

Under the expedited permitting process of the Maine Wind Energy Act, all applications for new wind farms are reviewed directly by the Commissioner of the Department of Environmental Protection.[127] All appeals of the decision of the Commissioner are made directly to the Board of Environmental Protection.[128] Appeals of decisions made by this Board are made to the Maine Law Court, the equivalent of the Vermont Supreme Court.[129] Although the Department of Environmental Protection is the primary agency handling the siting of new wind farms, other departments, like the Department of Transportation, may also become involved in the wind farm siting process in the event that the proposed wind farm development impacts areas of their jurisdiction.

Applications filed in unorganized or de-organized areas of Maine require a Maine Land Use Planning Commission certification before the applicant can apply to the Department of Environmental Conservation.[130] This certification evaluates how the development abides by land use guidelines enforced by the Commission. This requirement applies for wind farms sited in both expedited and non-expedited permitting areas.[131] Unorganized areas of Maine are those that do not have a municipal government, while de-organized areas are those that used to have a municipal government but chose to disband such an entity.[132]

In 2018, the Maine Department of Environmental Protection released a set of rules called Chapter 382, "Wind Energy Act Standards", which provides further clarifications regarding the review process and standards for siting under the Maine Wind Energy Act. Chapter 382 provides information regarding how a wind energy development should be evaluated for its impacts on the scenic character of its surrounding landscape.[133] It also outlines tests by which applications should be evaluated for their effects on public safety, as well as their overall benefit for the state of Maine.[134]

Under Chapter 382, a wind development must not significantly compromise scenic views from a Scenic Resource of State or National Significance (SRSN).[135] An applicant must also demonstrate that a proposed wind energy development does not create unreasonable and adverse shadow flicker effects at any occupied building located on property not owned by the applicant.[136]

Chapter 382 further provided clarification regarding the criteria on which a new wind development will be evaluated. One unique criterion requires an applicant to demonstrate that a proposed wind energy development will establish tangible environmental and

economic improvements or benefits for the state of Maine. Some criteria by which these benefits are evaluated include:

(a) The estimated number of jobs created statewide and in the host communities;
(b) The estimated annual generation of electricity from the development;
(c) The anticipated property tax payments from the project;
(d) The project's effect on electrical rates for Maine residents;
(e) Evidence of a power purchase agreement demonstrating the intended sale or use of the electrical energy generated from the development.[137]

6.1.4 The Maine Model Wind Facilities Ordinance

The Maine Model Wind Facilities Ordinance provides guidance to municipalities for developing siting rules for wind farms.[138] The ordinance recommends that wind facilities be classified into one of three types. A table describing these classifications is presented in Appendix C.

For Type 3 projects, or projects with an aggregate capacity greater than 100 kilowatts, the Model Ordinance suggests that municipalities require an applicant to measure the wind using a meteorological tower.[139] The ordinance further suggests that applicants be required to meet certain safety standards, like implementing measures to prevent hazards from malfunctioning towers or accumulated ice on wind turbine blades by establishing a setback requirement of 1.5 times the height of a turbine.[140] The Ordinance also recommends that municipalities require that blade tips be a minimum of 25 feet from the ground, and require mitigation of the potential signal interference that can result from a wind farm.[141]

For Type 3 projects, the Model Ordinance also recommends the use of monopole towers, or towers that are composed of a single freestanding pole, unless applicants demonstrate that such towers are not practical.[142] Monopole towers are simpler and have better aesthetics, require fewer trees to be cut, allow access to the tower under cold weather conditions, are safer for birds, and allow electrical equipment to be enclosed and protected from the elements.[143]

The Model Ordinance further recommends that municipalities require wind turbines to have over-speed controls, or brakes that can be applied in case high winds cause danger of deterioration of the turbines.[144] The Model Ordinance also recommends that municipalities outright prohibit building-mounted turbines.[145] Vibrations from the turbines can stress building frames, thus interfering with the structural integrity of the building. Turbines on buildings can also generate interruptive shadow flicker effects.

The Model Wind Ordinance further provides guidance to municipalities regarding the types of environmental restrictions that towns should place on wind farms. When considering a new project, municipal reviewing authorities are urged to consult with the *Beginning with Habitat* program map to determine if the proposed site is near an environmentally sensitive area.[146]A wind power electrical generation facility should also aim to reduce erosion and sedimentation resulting from soil disturbance. The state of Maine provides guidance to municipalities regarding best erosion and sedimentation control practices through a handbook called the *Maine Erosion Control Handbook for Construction: Best Management Practices*. [147] The Model Ordinance also recommends that a sound assessment for new wind farms be conducted.

Because the construction of wind turbines requires moving around heavy machinery, damage to roads may occur. [148] As a result, the Model Ordinance recommends that municipalities require repair costs to such infrastructure be covered at the expense of the applicant. [149] Any artificial habitats created by wind facilities should also minimize attraction to raptors or their prey. In addition, scenic impacts and shadow flicker effects from wind turbines on neighboring properties should also be minimized.[150]

6.1.5 The Renewable Energy Portfolio Standard

The Renewable Portfolio Standard is a Maine law that requires at least 30 percent of all electricity in Maine to be sourced from Class I renewable resources, which are defined as any renewable energy generation facility that was constructed before 2005. [151] The Standard further requires that ten percent of all energy in Maine must be sourced from "new" renewable sources, or projects built or substantially refurbished since 2005.[152] As of 2017, the state of Maine has been in compliance with the Renewable Portfolio Standard.[153] Appendix D provides a table detailing the percentage of power in the states of Maine, New Hampshire, and New York that come from different types of energy sources as of the end of 2019.

6.2 Parties to the Approval Process

This section outlines some of the public and private sector groups that are involved in the wind farm permitting process. Relevant groups include the Governor's Task Force on Wind Power, the Maine Board of Environmental Protection, the Department of Environmental Protection, and the Maine Land Use and Planning Commission. Private sector groups include wind farm developers and conservation groups that are interested in preserving the natural habitat of Maine. As with New York, there are also activist groups that protest specific wind energy developments.

6.2.1 Governor's Task Force on Wind Power

On May 8, 2007, Governor John Baldacci established the Task Force on Wind Power Development in Maine.[154] This task force aimed to accomplish three key goals: (1) make Maine a leader in wind power development; (2) protect Maine's quality of place and natural resources; and (3) maximize the tangible benefits to Maine residents.[155] The impetus to develop this task force was the decision of the Department of Environmental Protection to deny a permit to the Black Nubble wind project. The Black Nubble Project failed to pass the Harmonious Fit Test, which required that a proposed wind facility fit harmoniously into its surrounding landscape.[156] Such a test is incredibly difficult to pass for wind turbines that are taller than 300 feet.

In February of 2008, the Task Force on Wind Power Development concluded its research and recommended that the state of Maine host at least 2,000 megawatts of installed wind power capacity by 2015, and at least 3,000 megawatts by 2020.[157] The Task Force further recommended that the state of Maine establish Expedited Permitting Areas, or areas in Maine where streamlined permitting procedures would apply.[158] The proposed permitting areas would include all organized towns, portions of unorganized territories in the state on the fringe of the Land Use Regulation Commission's jurisdiction, and areas within one township of certain public highways.[159]

The Task Force recommended that studies evaluating the effect of a project on scenic character be limited to eight horizontal miles.[160] The Task Force also recommended that the DEP Commissioner be responsible for issuing all permits, with an expedited process and decisions expected within 185 days.[161] The Task Force further recommended that the Maine Board of Environmental Protection serve as an appeals board to decisions made by the Commissioner, and that legal appeals from decisions go directly to the Law Court rather than to the Superior Court.

The state of Maine failed to meet the proposed goal of installing 2,000 megawatts of wind power capacity by 2015. In 2019, the state of Maine had approximately 923 megawatts of installed capacity.[162] Many of the subsequent recommendations of the Task Force on Wind Power Development have since been incorporated into the Maine Wind Energy Act. There have also been several revisions to the Maine Wind Energy Act, which are detailed in a later section.

6.2.2 The Department of Environmental Protection

The Maine Department of Environmental Protection is the primary agency responsible for issuing and reviewing decisions relating to wind energy developments. All applications for

new wind farms are submitted to the Department of Environmental Protection (DEP).[163] The DEP is also responsible for enforcing the Site Location and Development Act, along with implementing the Maine Wind Energy Act.[164] The Department is organized into four key bureaus: the Bureau of Air Quality, the Bureau of Land Resources, the Bureau of Remediation and Waste Management, and the Bureau of Water Quality.[165] The Office of the Commissioner oversees the entirety of the organization. Under the Maine Wind Energy Act, the DEP commissioner is responsible for issuing all permits for wind farm applications in Expedited Permitting Areas. The Board of Environmental Protection serves as an appeals board for decisions made by the Commissioner. The Commissioner of the Department of Environmental Protection is appointed by the Governor and confirmed by the Maine State Senate.[166]

6.2.3 The Maine Land Use Planning Commission

The Maine Land Use Planning Commission serves as the planning and zoning authority for the unorganized and de-organized areas of the state of Maine, including townships and plantations.

Prior to 2012, the Maine Land Use Planning Commission (LUPC) was responsible for handling the siting of all wind energy developments in unorganized and de-organized areas of Maine, both those within Expedited Permitting Areas and those that are not within such areas. Since 2012, the siting for all grid-scale wind developments occurs under the Maine Department of Environmental Conservation. Projects in areas of jurisdiction have to receive a certification from the Land Use Planning Commission prior to submission of an application. This certification requires that a given project comply with land use standards enforced by the Commission.[167] The Maine Land Use Planning Commission is also responsible for handling the permitting for offshore wind projects. The Commission is composed of nine members. Eight of the seats are filled by the counties with the most acreage within the unorganized and de-organized areas of the State, while the ninth seat is appointed by the governor.[168] Total area under the jurisdiction of the LUPC encompasses over ten million acres, or over half of total land area in the state of Maine.[169]

6.2.4 The Maine Board of Environmental Protection

The Maine Board of Environmental Protection is a seven-member board whose members are appointed by the Governor of Maine and confirmed by the Legislature.[170] Although the Board is part of the Department of Environmental Protection, it has independent decision-making authority in the areas of its responsibility. The Board of Environmental Protection handles all appeals of decisions made by the Commissioner for the Department of Environmental Conservation. The Board also has rulemaking authority.[171] Licenses for

projects of statewide significance are all issued by the Maine Board of Environmental Protection.

The passage of the Maine Wind Energy Act in 2008 forced the Maine Board of Environmental Protection to develop new rules regarding the interpretation and implementation of the provisions of the law. In 2011, the Maine Board of Environmental Protection voted to impose more stringent noise regulations. The Board lowered the maximum allowable noise limit from 42 decibels to 40 decibels between 7:00 PM and 7:00 AM as measured from houses and other locations within one mile of a turbine. [172]

Another important development regarding the Maine Board of Environmental Protection occurred in 2014, when the Maine Supreme Court affirmed the authority of the Board of Environmental Protection to review decisions of the Commissioner of the Maine DEP. [173] The case arose after a wind farm developer called Passadumkeag Windpark sought approval from the Department of Environmental Protection for the development of a wind farm on property owned by Penobscot Forest in Grand Falls Township. [174] The DEP commissioner initially denied the application; however, the developer appealed to the Board of Environmental Protection, who approved the application. Opponents of the project eventually appealed the decision to the Maine Law Court. The Court found that the Board of Environmental Protection did, in fact, have the authority to review decisions of the Maine DEP Commissioner.

6.2.5 Municipal Governments

All municipal governments have the right to issue ordinances concerning the siting of new wind farms. Although there is no statewide mandate discussing how municipalities should design such ordinances, municipal governments can look to the Maine Model Wind Ordinance for guidance. As discussed earlier, the authority for approving grid-scale wind developments ultimately lies with the Department of Environmental Protection; however, developers are required to consult with affected communities prior to their submission of an application to develop a new wind farm.

6.2.6 Wind Farm Developers

There are several wind farm developers that are active in the state of Maine. Patriot Renewables currently owns and operates four wind farms in Maine, including Saddleback Ridge, Spruce Mountain Wind, Beaver Ridge Wind, and Canton Mountain Wind. [175] Patriot Renewables is a subsidiary of a construction and development firm called Jay Cashman, which has a comprehensive portfolio of companies and services in civil engineering.[176] Novatus Energy is also particularly active in the state of Maine. The firm

operates three sites in the state, including Oakfield, Bingham, and Hancock developments. Aside from its operations in Maine, the firm also owns utility-scale wind and solar projects across 11 states.[177]

6.3 Wind Energy as a Political Issue in the State of Maine

The development of wind energy is frequently a highly contentious and partisan issue in the state of Maine. The Maine Wind Energy Act was particularly instrumental in bringing the issue of wind farm development to the forefront of Maine politics. Since the passage of the bill, there have been multiple attempts to weaken the legislation.

One of the most controversial parts of the Maine Wind Energy Act was its limitation of visual impact studies to all areas within eight horizontal miles of the development. In 2017, a bill–LD 1810, HP 1255– aimed to increase this limit from eight miles to 40 miles. [178] The bill ultimately did not pass the legislature. A similar bill–LD 901, HP 629– aimed to increase this limit from eight miles to 15 miles.[179] It passed both the Maine House and Senate, but was ultimately vetoed by then-Governor LePage, who claimed that it would create more work for the Maine Department of Environmental Protection and Land Use Planning commission.[180] He also claimed that the bill would allow the legislature to "involve itself in the decisions of the agencies [thus further] politicizing what should be [a] technical and science-based process."[181]

In 2015, the Maine state legislature passed "An Act to Improve Regulatory Consistency."[182] The legislation provided a way for unorganized townships and plantations to opt out of the expedited permitting area process via a petition process. Under this new law, ten percent of registered voters who voted in the last gubernatorial election had to sign a petition to exit the expedited permitting process.[183] After an area had met this threshold, the Land Use Planning Commission also had to evaluate and approve the petition.[184] This evaluation was based on a determination of whether or not the removal of the unorganized area of land would (1) have an unreasonable adverse effect on the goals of the state for wind energy, and (2) would be consistent with the values and goals in the Comprehensive Land Use Plan for the Unorganized Territories, which outlines the objectives and purposes of the Maine Land Use Planning Commission.[185] Since the passage of the law, over 730,000 acres have been removed from the original 3.4 million acres deemed as Expedited Permitting Areas.[186]

In 2018, then-Governor of Maine Paul LePage signed a moratorium prohibiting state agencies from approving new wind farms in most of Maine.[187] He stated that the moratorium would remain in place until the Maine Wind Energy Advisory Commission reported on the economic impact of wind energy and recommended potential regulatory

changes.[188] This commission was particularly controversial, as its meetings were all closed to the public and not subject to the state's Freedom of Access Act. The Conservation Law Foundation, an environmental advocacy group based in New England, sued the administration. The foundation claimed that the executive order issued by the Governor was unconstitutional. The lawsuit was ultimately dismissed in Maine Superior Court, stating that conservation groups had not proven that the moratorium had actually harmed existing wind turbine projects.[189]

The Maine Wind Energy Advisory Commission met for a total of seven times, before being disbanded in early 2019.[190] All meetings were made open to the public. It ultimately issued a relatively insignificant report detailing areas regarding wind energy that should be further researched. No budget had been allocated to the Commission for research, studies or analysis, meaning that it was limited to materials available from "Maine Government resources, public email comments, reviews of literature and studies available on the internet and knowledge and research of individual committee members."[191]

In 2019, the new Governor Janet Mills signed an executive order ending the moratorium on new wind developments.[192] Although the moratorium signed by Governor LePage was relatively short-lived, it undeniably slowed down the progress of wind energy development in the state of Maine. Although no developers canceled projects or announced plans to abandon the state under the moratorium, many suspended the planning work for new wind farms.[193]

Moving into the future, wind farm siting will continue to be a contentious issue in the state of Maine. There are two wind farms–RoxWind, a four-turbine, 15.2-megawatt development in Western Maine, along with Weaver Wind, a 22-turbine, 72.6-megawatt development in Bar Harbor, Maine–that are currently in the permitting and pre-development process.[194] In addition, Maine is currently developing an offshore wind farm called Deepwater Wind.[195] As Maine continues to grow its renewable energy sector, the siting of new wind farms is likely to remain a contentious issue.

6.4 Storage of Electricity Generated from Wind Energy

Although the state of Maine has made great strides in the development of wind energy, the storage of electricity generated from wind developments still remains a major challenge. Transmission lines in Maine are oftentimes too weak to carry all the power generated by wind farms.[196] As a result, grid operators oftentimes engage in curtailment, or ordering wind energy developments to reduce output or stop running.[197] To improve the efficiency of renewable energy in Maine, it is vital that the state further develop battery storage systems as well as transmission line networks.

Although Maine currently does not have major storage capacities for electricity generated by wind energy, the state has commissioned several studies to look into this technology. In December 2019, the Commission to Study the Economic, Environmental, and Energy Benefits of Energy Storage to the Maine Electricity Industry completed its study regarding the future of battery storage in the state of Maine.[198] The Commission recommended that the state set a short-term goal of reaching 100 megawatts of storage capacity by 2025 to signal to investors and developers that the state had a commitment to developing battery storage systems.[199] To meet this goal, the Commission recommended that the state create an incentive for private-sector firms to develop energy storage projects that are paired with renewable energy.[200]

7. NEW HAMPSHIRE

This section provides an overview of grid-scale wind farm siting processes in New Hampshire. It discusses the application process as well as the major stakeholders to the approval process, along with relevant rules and regulations concerning grid-scale wind developments.

7.1 The Wind Farm Approval Process in the State of New Hampshire

All applications for a certificate to build a wind energy facility in New Hampshire must be filed with the chairperson of the Site Evaluation Committee (SEC), the primary body responsible for reviewing and approving the siting of new utility-scale energy production facilities.[201] Each application must provide all necessary information to meet the requirements of each state and federal agency with permitting or regulatory authority over the proposed facility. These requirements include information such as the type and size of each major part of the proposed facility, the preferred choice of the applicant and other alternatives considered available for the site, and the proposals by the applicant for studying and solving environmental problems.[202] Upon the filing of an application, the SEC forwards a copy to all state agencies having permitting or other regulatory authority. If the application does not contain sufficient information for the purposes of any of the relevant state agencies, that agency notifies the committee and specifies what information the applicant must supply.[203]

The committee must decide whether or not to accept an application within 60 days of filing. If the application is deemed incomplete, the applicant has 10 days to amend the application and submit a new, corrected version. All state agencies with permitting or other regulatory authority must report their progress to the committee within 150 days of the acceptance of an application, defining draft permit conditions and specifying any additional information

needed to make a final decision on the parts of the application relevant to its jurisdiction. These agencies must then submit to the committee a final decision on the parts of the application within their purview within 240 days after the application has been accepted. Finally, the committee must either issue or deny a certificate within 365 days of the acceptance of an application.[204]

In order to receive a certificate, the applicant must have adequate financial, technical, and managerial capability to assure the construction and operation of the facility in continuing compliance with the terms and conditions of the certificate. The site and facility must also not have an unreasonable effect on the orderly development of the region, aesthetics, historic sites, air and water quality, the natural environment, and public health. Additionally, it is necessary that the recipient of a certificate act in the interest of the public, as determined by the SEC.[205]

In December 2015, the Site Evaluation Committee adopted new rules governing the siting of grid-scale energy projects. These rules provided additional specifications for wind farm developers. The new rules concern notifying all abutting property owners of wind system projects during the pre-application public information session; demonstrating full control of the project site, including turbine sites, transmission line, and substation sites before an application is considered by the SEC; and performing an aesthetics and visual impact analysis which must extend to a minimum of a ten-mile radius from each turbine. These rules also require the designing of a decommissioning plan prepared by an independent, qualified person. This plan details the eventual removal of all structures at the energy site at the end of their useful life and processes for restoring the site.[206]

At least 30 days before filing an application for a certificate with the SEC, an applicant must hold at least one public session in each county where the proposed facility is to be constructed and must publish a notice about the meeting no less than 14 days before it takes place. Upon the receipt of an application for a certificate, the attorney general appoints an assistant attorney general as a counsel for the public, who represents the public by seeking to protect the environment and ensuring that the development provides adequate energy.[207]

Within 45 days of acceptance of an application for a certificate, the applicant must again hold at least one public information session with a notice no less than 14 days before it takes place, with the SEC administrator or other designee presiding, in each county where the proposed facility is to be located.[208] In these sessions, information on the location and plans for the proposed facility and public education regarding the SEC application review process must be presented. Within 90 days after acceptance of an application, a public hearing must be jointly held by the Site Evaluation Committee and other state agencies in each county where the proposed facility is to be located.[209] Additional public hearings may

be held in Concord or any of the counties in which the facility is to be located. The SEC must consider and assess all evidence presented at public hearings and all written information submitted by the public before, during, and after public hearings. All proceedings are open to the public.[210]

7.2 Parties to the Approval Process

There are a variety of public- and private-sector groups that serve as stakeholders in the approval process for new wind farms. Public sector groups include the New Hampshire Site Evaluation Committee, state regulatory agencies, and local municipalities. However, given that wind energy in New Hampshire is a relatively young industry—only 2.38 percent of energy needs in the state are met via wind power—there are at present no significant private sector groups to discuss.[211] There are no significant wind farm developers in the state, nor are there any particular non-profit groups protesting wind farm developments.

State agencies with permitting or other regulatory authority may participate in committee proceedings. These agencies review proposals and permit requests and submit draft permit terms to the committee, identify concerns about the proposal, and when issues are raised, designate witnesses before the committee to provide input and answer questions. Additionally, within 30 days of the receipt of notification of proceeding, state agencies not having authority but wishing to participate may advise the committee and be allowed to do so if the committee determines that a material interest in the proceedings is demonstrated.[212]

7.2.1 The Site Evaluation Committee

In New Hampshire, the Site Evaluation Committee is the primary body responsible for reviewing and approving the siting, construction, and operation of energy facilities. The committee is also responsible for monitoring and enforcing the compliance of approved facilities with the conditions of their approval certificates. All proposed energy facility siting projects exceeding 30 megawatts in capacity fall under the jurisdiction of the SEC. The SEC also handles other projects relating to storage, delivery, and production of energy.[213] In addition, renewable energy facilities capable of producing between five and 30 megawatts may also fall under the jurisdiction of the SEC if deemed necessary by the committee, either by its own motion or at the request of the developers.[214]

Following a two-year intensive study on the siting process, in 2014, the New Hampshire legislature passed Senate Bill 245, which made changes to the composition and review process of the SEC and laid out the current guidelines for the application and approval

process for the siting of energy facilities—including industrial wind farms—which this section outlines.[215]

The SEC includes nine members: three commissioners of the Public Utilities Commission, the chairperson of which is the chairperson of the SEC; the Commissioner of the Department of Environmental Services, who is the vice-chairperson of the committee; the Commissioner of the Department of Business and Economics Affairs, or a designee; and the Commissioner of the Department of Transportation. Other members include the Commissioner of the Department of Natural and Cultural Resources, the Director of the Division of Historical Resources, or a designee; and two members of the public, appointed by the Governor and confirmed by the New Hampshire Executive Council. One of these members must be an attorney in good standing with the NH Bar Association. Both members must have expertise and experience relevant to siting, planning, business, or finance.[216]

The chairperson serves as the chief executive of the committee. This person has the power to delegate to other members the duties of the presiding officer, perform administrative actions for the committee, and form subcommittees to consider and make decisions on applications. These decisions include the issuance of certificates which may be considered the committee. A sub-committee may have no fewer than seven members, two of which are public members with the remaining five or more selected by the chairperson from among the state agency members of the committee.[217]

7.2.2 Other State Agencies

Other state agencies that are parties to the wind farm approval process in the state of New Hampshire include the New Hampshire Department of Environmental Services, the Department of Safety, the Department of Transportation, and the Division of Historical Resources. In the wind farm siting process, the Department of Environmental Services has jurisdiction and regulatory power over the impact of projects on wetlands, pollution discharge, alteration of terrain, and air and water quality certifications.[218] The New Hampshire Department of Transportation regulates the transportation of oversized wind farm components on highways.[219] During the construction of wind farm foundations, the Department of Safety has authority over the provision of blasting permits to developers, which are necessary for clearing the land on which a wind farm is to be sited.[220] In the event that a proposed wind farm has the potential to affect historic sites, the Division of Historical Resources can consult with the U.S. Army Corps of Engineers to mitigate such effects.[221]

7.2.3 Municipalities

The SEC must consider the input of municipal and regional planning boards and commissions regarding the potential effect of a facility on the development of the region. Similar to relevant state agencies, municipalities in which the proposed facility is located may request through the committee that the applicant provide additional information sessions to inform the public of the proposed project.[222]

All wind energy facilities not governed by the SEC fall under the jurisdiction of local communities. However, state law prohibits municipalities from adopting ordinances or regulations which unreasonably limit the installation or performance of wind energy facilities. Prohibited ordinances include those that ban small wind energy systems in all districts within a municipality, those that require a setback from property boundaries more than 150 percent the height of the tower and blades height, and those that set a noise limit lower than specified by the Site Evaluation Committee.[223]

7.3 Application Fees

Developers applying to build a wind energy facility must pay a $50,000 base charge plus $1,000 per megawatt for the first 40 megawatts and $1,500 per megawatt for each megawatt in excess of 40 megawatts.[224] There are also additional filing fees for administrative proceedings. These include a $10,500 fee for the following requests: petition for committee jurisdiction, petition for declaratory ruling, certificate transfer of ownership, request for exemption, and request to modify a certificate. If heard by a three-member subcommittee, the fee is only $3,000.[225]

7.4 Storage of Electricity Generated from Wind Energy

As of the end of 2019, New Hampshire does not have any major battery storage capacity.[226] There is currently a battery storage system that is being considered in the town of Littleton; however, there have been safety concerns regarding the storage system.[227] The future status of this system is uncertain.

There have been programs to establish smaller household-level batteries. These smaller batteries are built into the electrical systems of homes. They store excess electricity generated by renewable energy developments and release the electricity into household electrical systems to lower systemwide demand during peak hours.[228] In January 2019, the Public Utilities Commission approved a pilot program of household–level storage to be administered by the company Liberty Utilities.[229] The firm will install up to 200 batteries in the homes of select customers.[230]

8. SUMMARY OF FINDINGS

The three states of New Hampshire, Maine, and New York each present unique ways for the siting of grid-scale wind developments. This section summarizes our findings for each of these states.

In New York, the State Board on Electric Generation Siting and the Environment handles the siting for all wind generation facilities that produce more than 25 megawatts of power.[231] The State Board is composed of the chair of the Department of Public Service, who serves as the chair of the siting board; the commissioner of the Department of Environmental Conservation; the CEO of Empire State Development; and the commissioner of the New York Department of Health.[232] There are also two public members who are added to the commission, both of whom reside within the municipality in which the facility is proposed to be located.[233] One of these public members is appointed by the President Pro Tempore of the Senate; another is appointed by the Speaker of the New York Assembly.[234]

In Maine, all wind energy projects are sited under one of three pieces of legislation: the Maine Wind Energy Act, the Site Location of Development Act, or the Natural Resources Protection Act. All wind farms that produce more than three acres of impervious surfaces are considered grid scale projects.[235] Non-grid scale projects are sited under the Natural Resources Protection Act.[236] Grid scale projects are sited under either the Site Location of Development Act or the Maine Wind Energy Act.[237] If a grid-scale project is located within an Expedited Permitting Area, it is sited under the Maine Wind Energy Act; if not, it is sited under the Site Location of Development Act.[238]

Projects sited under the Maine Wind Energy Act feature a less stringent scenic impacts assessment and a more expedited permitting process. All applications are reviewed directly by the Maine Commissioner of the Department of Environmental Protection. All appeals of decisions made by the Commissioner are made directly to the Board of Environmental Protection, whose decisions can then be appealed to the Maine Law Court. In the event that a project is being sited in an unorganized or de-organized area of Maine, applications also require a certification from the Land Use Protection Commission. This certification is granted if the project is found to abide by the land use standards enforced by the Commission.[239]

In New Hampshire, all applications for a certificate to build a new wind energy facility must be filed with the chairperson of the Site Evaluation Committee. The Site Evaluation Committee is composed of nine members: three commissioners of the Public Utilities

Commission, the Commissioner of the Department of Environmental Services, the Commissioner of the Department of Transportation, the Commissioner of the Department of Natural and Cultural Resources, the Director of the Division of Historical Resources, and two members of the public.[240] These members of the public are appointed by the governor and confirmed by the New Hampshire Executive Council.[241]

One member must be an attorney in good standing with the New Hampshire Bar Association.[242] Both members must have expertise and experience related to siting, planning, business, or finance. The chairperson of the Site Evaluation Committee is the chairperson of the Public Utilities Commission, while the Commissioner of the Department of Environmental Services serves as the vice-chairperson of the Site Evaluation Committee.[243]

9. POLICY OPTIONS

The state of New York presents a unique method of incorporating the opinions and concerns of local communities into the siting of utility projects that are of statewide significance. As discussed earlier, the New York State Board on Electric Generation and Siting includes two members from the community in which the wind farm is to be sited, along with the commissioners of state agencies and organizations that have potentially conflicting interests relating to a proposed wind energy development. The Department of Environmental Conservation, for example, has an interest in seeing that the given wind development does not negatively impact the environment. The New York State Energy Research and Development Agency, on the other hand, has an interest in ensuring that the wind energy development contributes meaningfully to the state's overall renewable energy goals.

The structure of the New York State Board on Electric Generation and Siting also reduces the likelihood of regulatory capture, a condition in which the board is eventually dominated by the industry it is charged with regulating. The members of the board are all drawn from different agencies that have varying regulatory interests. At the same time, local interests are directly represented via placement of community members on the board. For a given industry to "capture" the New York State Board on Electric Generation and Siting, they would need to have sway over a multitude of agencies that are either directly on the board or are considered automatic statutory parties in hearings regarding any utility project, not to mention the local members who also are placed on the board.

The approval process in New York has fostered a growing wind energy sector in the state. New York was ranked fourteenth in the nation for total megawatts of power generated from wind energy. That being said, the state still has significant progress to be made in making

wind energy a part of its overall electrical grid. Only about four percent of power needs in New York are currently met by wind energy.[244]

Like New York, the New Hampshire Site Evaluation Committee also incorporates the voices of different regulatory bodies with varying interests into the wind farm approval process. The voices of the public are also directly incorporated into the decisions made by the Committee. The New Hampshire Site Evaluation Committee provides an interesting example of how a smaller state with more limited resources handles the siting of complex wind energy projects. Compared to the New York Board on Electric Generation and Siting, the resources of the SEC are relatively limited. The SEC does not have its own budget, meaning that applicants must bear the cost of undertaking special studies and hiring necessary experts and counsel. The SEC also has no dedicated staff; rather, staff are hired on an ad hoc basis to deal with individual applications. [245] Members of the Site Evaluation Committee are not only required to handle the responsibilities of their respective agencies but are also required to perform the duties of the Site Evaluation Committee.[246] In spite of these handicaps in reviewing new applications, wind energy has still managed to take root in the state of New Hampshire. New Hampshire has 214 megawatts of installed wind capacity, greater than the 149 megawatts of installed capacity in Vermont.[247]

Among the three states of New York, New Hampshire, and Maine, Maine arguably has the process that is most friendly to the development of wind energy. The establishment of Expedited Permitting Areas in Maine reduces the regulatory hurdles that developers face in many other states, particularly in relation to determining the effect of a wind farm on the overall views of a given area. These Expedited Permitting Areas are located throughout Maine, ranging from the more populated coastlines to the less populated northern areas of the state. At the same time, there are fewer avenues for the input of the opinions of local communities on the siting location of a given wind development. Although wind developers are required to consult with local communities via public hearings, the ultimate decision regarding whether or not a wind farm is approved lies at the state level with the Maine Department of Environmental Protection, the Maine Board of Environmental Protection, or the Land Use Protection Commission. Given that decision-making is concentrated within one agency or commission, as opposed to decentralized among various bodies like in New York and New Hampshire, the Maine wind farm siting process is also far more susceptible to regulatory capture than that of New York or New Hampshire.

10. CONCLUSION

This report has provided commentary on wind farm siting processes in three states. It has also provided information regarding stakeholders to the siting process in each state and provided information regarding rules and laws that impact wind farms. The state of New

York presents an interesting method by which the interests of local communities can be incorporated into the evaluation of projects of statewide significance. The state of New Hampshire, meanwhile, provides an example of how a smaller state with more limited resources regulates the siting of complex wind energy developments. Maine is also interesting to examine. Of the three states, the siting processes in Maine are arguably the friendliest to the approval of new wind farms. Such a conclusion is supported by the rapid growth of wind energy in the state, along with the various processes designed to expedite the development of wind projects. Of the three states, Maine also sources the highest percentage of its electricity from wind energy. Moving forward, the Vermont State Legislature has a multitude of policy options to consider when changing the zoning processes for wind energy developments. In deciding the ultimate path forward, the state of Vermont must seek a compromise between its renewable energy goals and its desire to better incorporate local concerns into the overall wind farm permitting process. It is the hope of the authors that this paper provides some guidance regarding how these goals can best be balanced.

11. APPENDICES

Appendix A: Current and Proposed Wind Farms in Vermont as of Year-End in 2019

Current Wind Farms in Vermont

Wind Farm Name	Year Operational	Operator (current)	Production Capacity (MW)	Location	Activist Group Protesting Farm
Searsburg	1996	Green Mountain Power	6.05	Searsburg, VT	
Sheffield	2011	Brookfield Renewable Partners	40	Sheffield, VT	Ridge Protectors
Lowell Mountain	2011	Green Mountain Power	63	Lowell, VT	Lowell Mountain Group
Georgia Mountain	2012	Georgia Mountain Community Wind, LLC	10	Georgia, VT	Citizens for the Preservation of Georgia Mountain
Deerfield Wind (expansion of Searsburg farm)	2011	PPM Energy	30	Searsburg, VT	Save Vermont Ridgelines

Source: http://www.aweo.org/windprojects.php

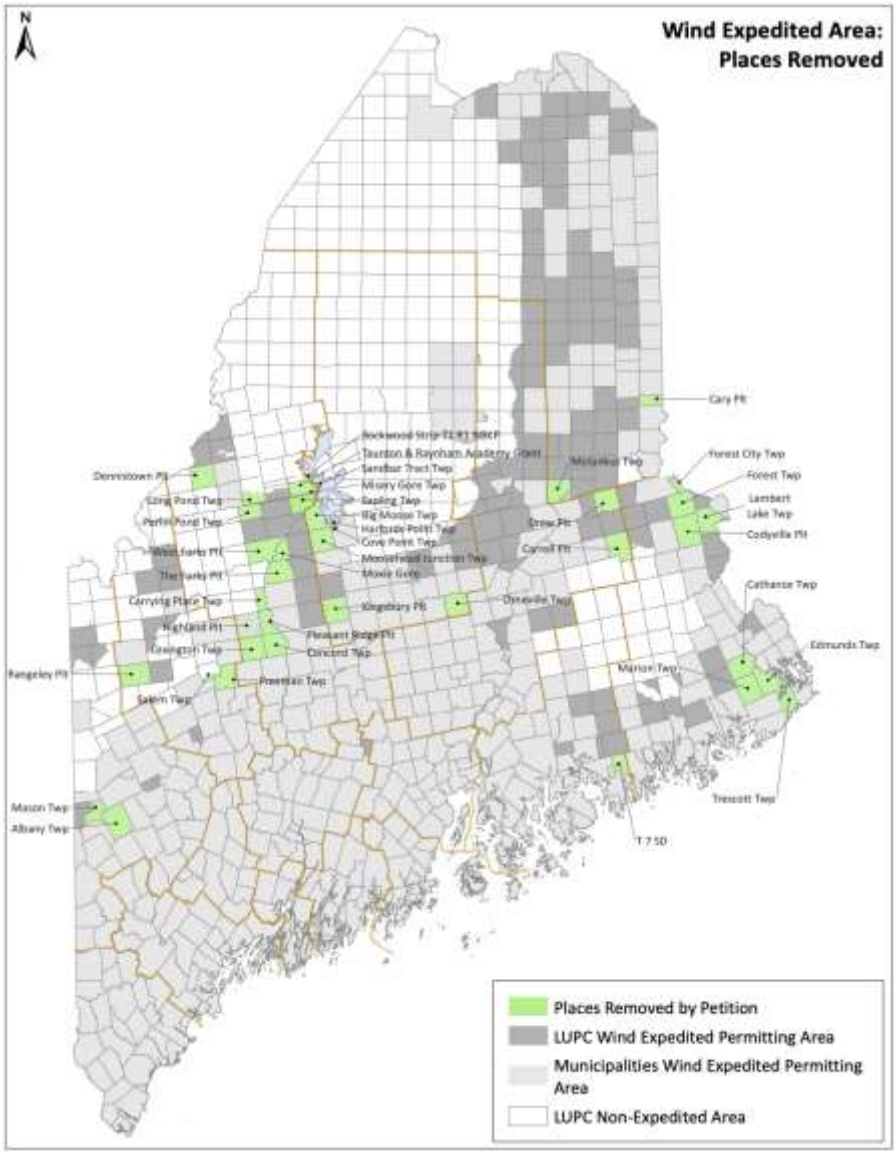
Proposed Wind Farms in Vermont

Wind Farm	Year Applied for Permit	Developer	Production Capacity (MW)	Location	Activist Group Protesting Farm
Dairy Air Farm	2016; ended pursuit of permit 2020	Allearth Renewables	2.2	Holland, VT	Citizens for Responsible Energy
Kidder Hill	2017; withdrew application in 2018	Kidder Hill Community Wind	5	Lowell, VT	No Kidder Hill Wind
Lowell Mountain, Eden	2013; withdrew application	BNE Energy	Not Specified	Lowell, VT	Lowell Mountain Group
Ricker Mountain	2010; withdrew application	Green Mountain Clean Energy	Not Specified	Bolton, VT	
East Haven, Ferdinand, Brighton	2007; withdrew application 2007	EMDC	53	Brighton, VT	Kingdom Commons Group
Dutch Hill	2005; withdrew application 2010	Noble Environmental Power	45	Heartwellville, VT	

Source: http://www.aweo.org/windprojects.php

Source: https://www.maine.gov/dacf/lupc/projects/wind_expedited_area/Summary.pdf

Appendix B: Map of Expedited Permitting Areas in Maine



Appendix C: Model Wind Ordinance Suggested Classifications of Wind Turbines

Suggested Classifications of Wind Turbines Under the Model Wind Ordinance

Type	Number of Turbines	Turbine Height	Aggregate Capacity	Site Location of Development Permit
1A	1	80' or less	Less than 100 kw	NA
1B	NA	More than 80'	Less than 100 kw	NA
2	NA	NA	100 kw or more	NA
3	NA	NA	100 kw or more	Yes

Source:
https://www.hcpcme.org/environment/energy/Model%20Wind%20Energy%20Facility%20Ordinance%20Presentation.pdf

Appendix D: Energy Portfolios of Maine, New York, and New Hampshire

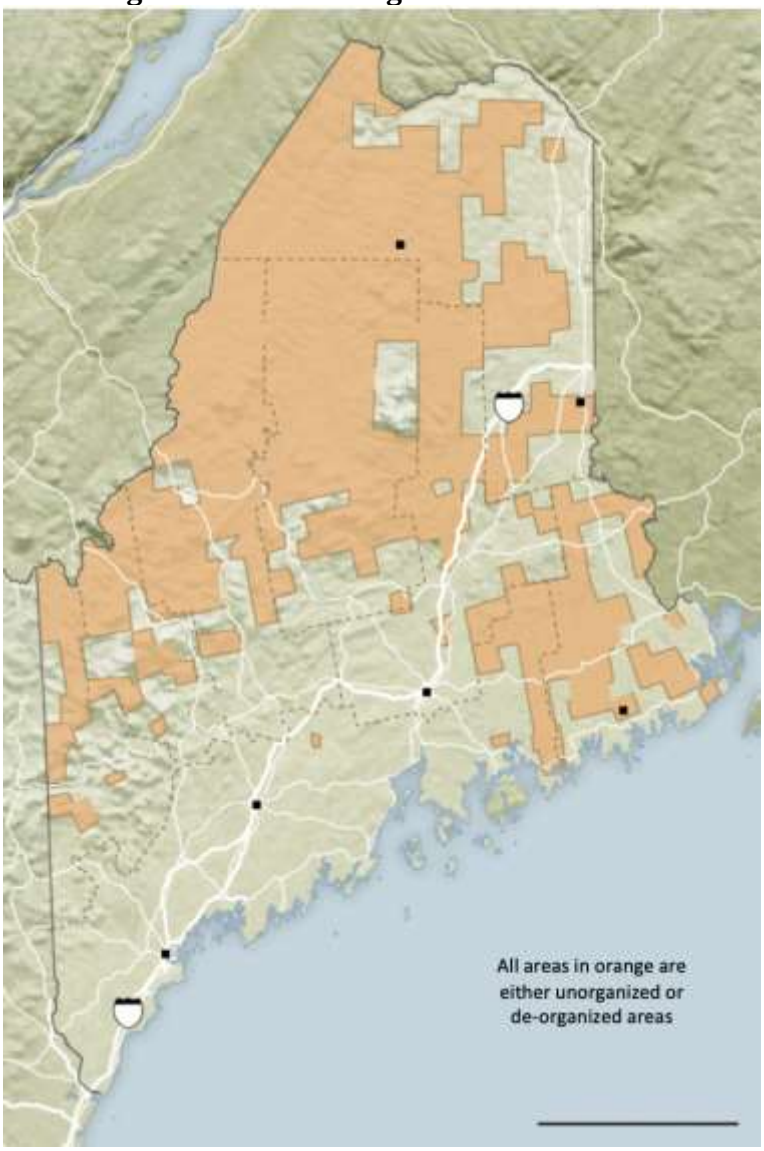
Selected Statistics on Maine, New York, and New Hampshire

Source of Energy	Maine: Percent of Energy Needs Met From Given Source	New York: Percent of Energy Needs Met From Given Source	New Hampshire: Percent of Energy Needs Met From Given Source
Hydropower	30.79%	22.03%	6.87%
Biomass	24.90%	1.43%	7.75%
Wind	23.80%	3.66%	2.28%
Natural Gas	15.91%	37.17%	19.96%
Nuclear Energy	N/A	33.81%	60.76%
Coal	0.82%	0.32%	1.91%
Oil	0.31%	0.37%	0.17%
Solar	0.11%	0.49%	N/A

Sources: https://windexchange.energy.gov/states/nh ; https://windexchange.energy.gov/states/me ; https://windexchange.energy.gov/states/ny

Appendix E: Unorganized and De-Organized Areas of Maine

Unorganized and De-Organized Areas of Maine



Source: https://www.nytimes.com/2016/01/17/us/in-maine-local-control-is-a-luxury-fewer-towns-can-afford.html

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