

Oil and Gas, Natural Resources, and Energy Journal

Volume 4 | Number 1

May 2018

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Dillon Hollingsworth

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Recommended Citation

Dillon Hollingsworth, *Tilting at Windmills: Reconciling Military Needs and Wind Energy Initiatives in the 21st Century*, 4 OIL & GAS, NAT. RESOURCES & ENERGY J. 7 (2018), <https://digitalcommons.law.ou.edu/onej/vol4/iss1/3>

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ONE J

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TILTING AT WINDMILLS: RECONCILING MILITARY NEEDS AND WIND ENERGY INITIATIVES IN THE 21st CENTURY

DILLON HOLLINGSWORTH*

I. Introduction

In 2016 nearly half of the electricity used to power the state of Texas was generated by wind.¹ In the same year, the Texas Comptroller conducted a study which found that the fifteen military bases in the state generate north of \$136 billion in economic activity.² As they have in other states³—and at

* The author is a second-year student at the University of Oklahoma College of Law. I would like to thank the editorial board, and particularly Articles Editor Sam Jimison for his help shepherding me through the initial stages of this comment.

1. *Wind Generation Output Tops 15,000 MW in ERCOT Region*, ELECTRIC RELIABILITY COUNCIL OF TEXAS (Nov. 28, 2016), <http://www.ercot.com/news/releases/show/113533>.

2. Bruce Wright, *Military Installations Worth Billions for Texas*, TEXAS COMPTROLLER OF PUBLIC ACCOUNTS (last visited Jan. 27, 2016), <https://comptroller.texas.gov/economy/fiscal-notes/2016/september/military.php>.

3. Joe Wertz, *New Wind Farms Cause Friction In The Sky Over Military Flight Routes*, NATIONAL PUBLIC RADIO (Sept. 11, 2017), <https://www.npr.org/2017/09/11/549549825/new-wind-farms-cause-friction-in-the-sky-over-military-flight-routes>; Donna Campbell, *We Must Protect Texas' Military Installations From Encroaching Wind Turbines*, THE DALLAS MORNING NEWS (April 19, 2017), <https://www.dallasnews.com/opinion/commentary/2017/04/19/must-protect-texas-military-installations-encroaching-wind-turbines>; Dan Way, *Crossover Hasn't Calmed Concerns About Wind Power's Effects on Military*, THE CAROLINA JOURNAL (May 9, 2017), <https://www.carolinajournal.com/news-articlecrossover-hasnt-calmed-concerns-about-wind-powers-effects-on-military/>.

the federal level—wind power and military interests began to collide,⁴ culminating in June, 2017 with the passage of a bill eradicating tax breaks for companies seeking to erect wind farms within 25 miles of military airspace within the state.⁵

In support of the bill, the Texas legislature cited sensitive security concerns in the area surrounding military aviation facilities, and stated that the bill aimed to “take into account the need to support and protect military aviation facilities located in this state”⁶ The concerns voiced by the Texas legislature echo those proffered by the U.S. Department of Defense (DoD) in its 2006 report to Congress on the dangers wind turbines pose in relation to national security interests.⁷

As with anything new, unforeseen issues have cropped up as alternative forms of energy further proliferate the political sphere—perhaps best evidenced by the slow burning conflict between wind farms and military installations. At this point only four states—California, Texas, Washington, and North Carolina have addressed the issue with statewide legislation. The legislation ranges from extensive siting guidelines incorporating open communication with the DoD to statewide moratoriums on wind farm permitting. The main reason for this is the same pervasive problem that has been at the root of most political issues dating back to the origin of the two-party system: Federalism.

Although the debate about federalism—whether regulatory power over particular issues should lie with a central governing body (the federal government) or be disbursed to the local (state) level—is what ultimately shish kabobbed George Washington’s wish for a party-free system,⁸ it may have been more beneficial over the course of the Republic than anything. Professor Erin Ryan, in her article “Federalism and the Tug of War Within: Seeking Checks and Balance in the Interjurisdictional Gray Area,” argues that the tension between problem-solving and checks-and-balances inherent in the debate about federalism is what has enabled our government to “adjust for changing demographics, technologies, and expectations without

4. OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING, REPORT TO THE CONGRESSIONAL DEFENSE COMMITTEES: THE EFFECT OF WINDMILL FARMS ON MILITARY READINESS (2006).

5. TEX. TAX CODE § 312.0021 (2018).

6. S.B. 277, 85th Leg. (Tex. 2017).

7. OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING, *supra* note 4.

8. *American History: Two Parties Emerge*, THE INDEPENDENCE HALL ASSOCIATION (last visited Jan. 27, 2018), <http://www.ushistory.org/us/19c.asp>.

losing its essential character.”⁹ Professor Ryan’s point about technology is particularly relevant here. Because of the way utility regulation developed in the United States, the federal government is relatively toothless when it comes to regulating wind farm siting on private property, leaving such regulation to state and local governments.¹⁰ The result is a much more localized and sporadic approach to wind farm siting, making it a zoning issue in many states.¹¹ While it made sense before constructing spacious wind farms populated by 300 foot tall reinforced plastic windmills became popular, this system of localized governance now serves to undermine the federal objective of empowering wind energy production.

The history of wind energy is at once very long, and incredibly recent. Wind has existed as long as the earth, and people have been harnessing its energy at least since the first sail boat hit the Nile River around 3100 B.C.E.¹² Wind energy as we view it today though (mammoth white windmills twisting lazily over the plains of the Midwest), didn’t rise to prominence until much more recently. The first windmill used to generate electricity popped up in Scotland in 1887,¹³ and by the 1950’s such power generators were somewhat prominent in various parts of the world.¹⁴ Wind power began to be seen as a legitimate energy option in the United States beginning in the 1970’s as a result of the Organization of Petroleum Exporting Countries’ oil embargo.¹⁵ By 2009 the U.S. was the world’s leading wind power producer, with over 35,000 megawatts (MW) of wind power installed.¹⁶ China has since claimed the top spot, but with a capacity of 82,184 MW in 2016 the U.S. has remained one of the two most prominent players on the wind energy stage.¹⁷

9. Erin Ryan, *Federalism and the Tug of War Within: Seeking Checks and Balance in the Interjurisdictional Gray Area*, 66 MD. L. REV. 503, 512 (2007).

10. H. Brendan Burke, *Dynamic Federalism and Wind Farm Siting*, 16 N.C. J.L. & TECH. 1, 21 (2014).

11. K.K. DuVivier, Thomas Witt, *NIMBY to NOPE – Or YESS?*, 38 CARDOZO L. REV. 1453 (2017).

12. Ernest E. Smith, Roderick E. Wetsel, Becky H. Diffen, and Melissa Powers, *Wind Law* § 1.01[1].

13. *Id.*

14. *Id.*

15. *Id.* at [2].

16. *Id.*

17. *Global Installed Wind Power Capacity (MW) – Regional Distribution*, GLOBAL WIND ENERGY COUNCIL (last visited Jan. 29, 2018), <http://www.gwec.net/wp-content/uploads/>

The oil embargo that led to wind's emergence stateside came because of U.S. foreign policy during the 1973 Arab-Israeli War.¹⁸ This was the moment at which the federal government had the greatest leeway to step in and set some boundaries—and the birth of an emerging industry that requires equipment large enough to disrupt various military operations. Instead, Congress understandably focused its energies on promotion of this alternative energy source by implementing policies to increase its development—such as the Public Utility Regulatory Policies Act of 1978.¹⁹

The Oil Embargo was a truly stunning moment for the United States, and one that left a lasting impression. U.S. reliance on foreign oil meant that OPEC's ability to pull the strings of the international market could have massive and immediate effects here at home. The embargo thrust energy independence to the forefront of every subsequent president's agenda.²⁰ In 1973 President Nixon announced "Project Independence," a promise to end energy dependency on foreign countries.²¹ In 1975 the U.S. created its now famous Strategic Petroleum Reserve.²² Gerald Ford and Jimmy Carter continued to emphasize the importance of an energy independent United States, and the emphasis has continued into the 21st century. One of the headlines of George W. Bush's 2003 State of the Union was his announcement of energy independence as a goal.²³

In short, the emphasis after the oil embargo and its subsequent crisis was placed squarely on creating independence. This mindset shaped the federal government's role in the burgeoning wind industry into one of encouragement and incentivization. The dirty deed of regulation was left to the states, and that precedent was set. Congress passed legislation in 1935 that clearly established a governmental intent that states have the power to regulate the siting of energy producing utilities within their borders, and

2012/06/Global-Installed-Wind-Power-Capacity-MW-%E2%80%93-Regional-Distribution-1.jpg.

18. *Milestones in the History of U.S. Foreign Relations: Oil Embargo, 1973-1974*, OFFICE OF THE HISTORIAN, BUREAU OF PUBLIC AFFAIRS, UNITED STATES DEPARTMENT OF STATE (last visited Jan. 27, 2018), <https://history.state.gov/milestones/1969-1976/oil-embargo>.

19. 16 U.S.C § 2601 (2018).

20. Luis E. Cuervo, *OPEC FROM MYTH TO REALITY*, 30 Hous. J. INT'L L. 433, 449 (2008).

21. *Id.*

22. *Id.*

23. George W. Bush, President of the United States, 2003 State of the Union Address (Jan. 28, 2003).

that demarcation line has been left largely intact over the subsequent 80 years.²⁴

All of this boils down to the fact that the wind energy industry developed in a manner that left its regulation—especially the regulation of its siting—to the states. Taking into account both the history of utility regulation in the U.S. (left mainly to the states due in large part to its physical dimensions)²⁵, and the context pushing the federal government to incentivize states to turn to alternative fuel sources in order to develop energy independence, the federal government elected to pull its hat out of the ring regarding wind farm siting regulation. Now that the Department of Defense has developed concerns about wind farms and their effects on defense readiness—with more states beginning to listen—that decision could ultimately hurt the nation’s long-term goal of endorsing alternative energy sources. The current regulatory schemes of those states who have addressed the issue evidence a split showing that at least some state legislatures, when left to their own devices on the issue, will choose defense over energy (whether they actually have to or not). With a military managed primarily at the federal level, and a federal determination that wind energy development is a positive, there is a clear space for the federal government to step forth and present a narrowly tailored solution to the issue.

The aim of this article is to assess the broken nature of the current system, first by outlining the DoD’s concerns, and examining what—if anything—has been done by the states to follow up in the decade since those concerns were voiced for the first time, beginning with a closer look at the goals and effects of the state-wide legislation in California, Washington, North Carolina, and Texas addressing the issue and continuing into a brief summary of state siting regulation schemes nation-wide. The article will conclude with a synthesis of the facts presented, showing why the concession of a slim portion of state power over the siting of wind energy facilities would be a positive change for all parties involved.

24. William Boyd and Ann E. Carlson, *Accidents of Federalism: Ratemaking and Policy Innovation in Public Utility Law*, 63 UCLA L. REV. 810, 824 (2016).

25. Hari M. Osofsky and Hannah J. Wiseman, *Dynamic Energy Federalism*, 72 MD. L. REV. 773, 781 (2013) (“Energy is a unique good because it relies on physical fuels located in limited global locations. The primary sources of energy, from fossil fuels to renewable sources such as sunlight and wind, are distributed unevenly within and among countries . . .”).

. Wind Power

The popularity of wind energy has surged in recent years. In 2015, wind power constituted nearly 1/5 of the renewable energy consumed in the United States, a 12.3% increase from 2014.²⁶ Wind power carries a bevy of economic benefits, centered around its ability to bring an infusion of cash to rural communities.²⁷ Investment in wind energy brings direct benefits in the form of higher employment levels, higher land lease payments, increased tax revenues, and alternative sources of income for local farmers.²⁸ It also brings indirect benefits such as opportunities for banks to provide financing for wind projects, and more work for suppliers of component parts as well as companies who manufacture equipment that is used to install and maintain the wind facility.²⁹

Wind energy also carries the benefit that it produces no pollution or dangerous emissions, distancing itself from some of the more notorious detractive elements of other potential energy sources.³⁰ The National Renewable Energy Laboratory reports that the use of wind farms has helped to reduce “direct power-sector carbon dioxide emissions” to the tune of 115 million metric tons, while also avoiding 97,000 metric tons of nitrogen oxides.³¹ Because they are fueled by naturally occurring wind, the energy wind farms produces is also inexhaustible—it will not deplete any natural resources.³²

The wind power industry has grown at a rate of 12 percent over the last five years and is projected to produce over 850,000 jobs—with an \$85 billion economic impact—between 2017 and 2020.³³

A. Technical Concerns

Despite the purported benefits described above, wind turbines cause their share of complaints as well. Before diving into state and federal regulation

26. U.S. DEPARTMENT OF ENERGY, 2015 RENEWABLE ENERGY DATA BOOK (2015).

27. K.K. DuVivier, *RURAL WIND WINDFALLS*, Kan. J.L. & PUB. POL’Y 401, 403 (2014).

28. *Id.*

29. *Id.* at 404-405.

30. U.S. DEPARTMENT OF ENERGY: OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY, WIND ENERGY BENEFITS (Jan. 2015).

31. *Id.*

32. *Id.*

33. *Wind Energy: Jobs & Economic Benefits in All 50 States*, AMERICAN WIND ENERGY ASSOCIATION (last visited Jan. 27, 2018), <https://www.awea.org/gencontentv2.aspx?ItemNumber=9852>.

of wind farms, it is helpful to have a basic understanding of the technical aspects of wind farms and why their construction (particularly near military installations) may be cause for concern. There are two basic types of wind turbines: vertical-axis (an oval shaped, eggbeater-style design) and horizontal-axis (the classic three bladed turbine seen across most of the U.S.).³⁴ The typical industrial wind turbine is somewhere between 328 and 650 feet tall—including the length of the blades—and is anchored in a platform ranging from 30-50 feet wide, 6-30 feet deep, and consisting of more than 1,000 tons of concrete and steel.³⁵ Such massive platforms are integral to the structural integrity of the turbines, which can weigh more than 300 tons.³⁶

The farms themselves can become unwieldy as well. The largest wind farm in the U.S. is currently under construction in the Oklahoma panhandle—the Wind Catcher Energy Connection Facility will cover around 300,000 acres and contain 800 wind turbines.³⁷

One of wind energy's major appeals is that its production does not create the emissions that come with production of energy from traditional fossil fuels. However, operators of small aircrafts have found a different kind of emission which has caused them to take issue with the turbines. A Kansas study found that wind turbines can create crosswind speeds which are dangerous to smaller aircraft.³⁸ This issue becomes clear when considering that the blade on a typical industrial turbine is between 100 and 200 feet long³⁹ and designed to rotate at fifteen to twenty revolutions per minute.⁴⁰

One concern that is particularly relevant to wind farm siting near military installations is an affect referred to as “shadowing.” Shadowing is a term used to refer to the phenomenon which occurs when an object in the path of

34. *How Do Wind Turbines Work?* OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY (last visited Jan. 27, 2018), <https://energy.gov/eere/wind/how-do-wind-turbines-work>.

35. *Fast Facts – Size*, NATIONAL WIND WATCH (last visited Jan. 27, 2018), <https://www.wind-watch.org/faq-size.php>.

36. *Id.*

37. *Wind Catcher Energy Connection – About the Project*, INVENERGY (last visited Jan. 27, 2018), <https://windcatcher.invenenergyllc.com/about-the-project/>.

38. Mara Rose Williams, *Wind Farms Could Endanger Small Aircraft, Study Says*, THE KANSAS CITY STAR (Jan. 17, 2014), <http://www.kansascity.com/news/local/article336745/Wind-farms-could-endanger-small-aircraft-study-says.html>.

39. NATIONAL WIND WATCH, *supra* note 35.

40. *Why Wind? FAQ*, WILLOWIND ENERGY (last visited Jan. 28, 2019), <http://www.willowindenergy.com/Why-Wind-/FAQs/#q7>.

an electromagnetic wave affects its propagation characteristics.⁴¹ Shadowing can lead to actual blockage of wave propagation, or interference in wave continuity of a radar beam⁴²—something likely to be found emanating from a military base. If the radar wave is completely blocked, it becomes impossible for the radar to detect any object in that region.⁴³ If there is only partial blockage, it is still possible to detect objects in the region, but it is more difficult, meaning the radar’s level of illumination and the target’s reflected signal will be weakened.⁴⁴

Another such concern is the potential that wind turbine operation will result in an undesirable reflected signal which may enter a radar receiver on a military installation, interfering with the radar’s ability to determine its desired attributes on a particular target of interest. This type of interference is known as “clutter.”⁴⁵ At least one major study has shown that clutter from wind turbines directly impacts the performance of radar at military installations.⁴⁶

Like any other structure which may impede air travel, there are existing regulations regarding wind turbines made in an effort to prevent unwanted outcomes such as aircraft collisions. The Federal Aviation Administration (FAA) recommends that wind turbines be marked and lighted in order “to provide day and night conspicuity and to assist pilots in identifying and avoiding these obstacles.”⁴⁷ The FAA recommends that turbines should be painted either white or light grey, and lit at night with aviation red flashing, strobe or pulsed obstruction lights, to the point that there are no unlit separations or gaps more than ½ statute mile in any single wind farm.⁴⁸ Turbines which have a rotor tip height taller than 499 feet should also have a second flashing red light, and all turbines of such size should be illuminated, regardless of location within a wind farm.⁴⁹ Even further lighting is recommended for turbines taller than 699 feet.⁵⁰

41. OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING, *supra* note 4 at 13.

42. *Id.*

43. *Id.*

44. *Id.*

45. *Id.* at 11.

46. *Id.* at 33.

47. U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION, ADVISORY CIRCULAR: OBSTRUCTION MARKING AND LIGHTING (Dec. 4, 2015).

48. *Id.* at 13.4.1, 13.5.2.

49. *Id.* at 13.6.

50. *Id.* at 13.7.

III. Department of Defense Concerns

The DoD, despite its concerns regarding potential obstruction, are legitimate proponents of alternative fuel sources. In fiscal year 2014 the DoD constituted around 77 percent of the total energy consumption by the federal government, meaning its position on renewable energy represents a substantial portion of the federal government's active position on the issue.⁵¹ The Air Force, Army, and Navy each have committed to producing 1 gigawatt of renewable energy by 2020.⁵² However, a commitment to renewable energy does not mean that the DoD has no concerns or interests in the siting of sizable wind farm installations.

There are two clear jumping-off points to get a snapshot of the military's concerns regarding wind energy installations. First, the Department of Defense Report to the Congressional Defense Committees from 2006 lays out with specificity the questions and concerns most important to the military.⁵³ Second, the DoD Siting Clearinghouse, established in 2011, is an entity manifesting from those concerns which exists in order to act on the DoD's views as the expansion of alternative energy continues at its current pace.⁵⁴

A. Department of Defense Report to the Congressional Defense Committees

In 2006 the DoD issued a report to Congress detailing its findings regarding the effect of wind farms on military readiness. The report covered wind farms' complications in regard to radar systems, DoD test and training capabilities, security on and around defense installations, the general environment, and made recommendations for mitigation efforts.⁵⁵

1. Radar Obstruction

The main concern of the report by far was the effects of wind turbines on radar systems at military aviation installments.⁵⁶ First, the blades on a

51. Jocelyn Durkay and Jennifer Schultz, *Energy Siting and Compatibility with the Military Mission*, NATIONAL CONFERENCE OF STATE LEGISLATURES (May 20, 2016), <http://www.ncsl.org/research/energy/energy-siting-and-compatibility-with-the-military-mission.aspx>.

52. *Id.*

53. OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING, *supra* note 4.

54. *About the DoD Siting Clearinghouse*, DOD SITING CLEARINGHOUSE, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE FOR ENERGY, INSTALLATIONS, AND ENVIRONMENT (last visited Jan. 28, 2017), <https://www.acq.osd.mil/dodsc/about/index.html>.

55. OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING, *supra* note 4.

56. *Id.* at 8.

turbine rotate at a speed applicable to aircraft which, combined with other technical factors, can cause them to appear as a “moving target of significant size” if they are constructed within the radar’s line of sight.⁵⁷ The DoD conducted its own study on a wind farm in New York which provided visual representations of the effects wind turbines can have on radar—clear evidence of Doppler behavior (an effect altering perception of radar waves due to the movement of the object creating them⁵⁸) while the blades rotate into the radar’s line of sight, and a fainter radar wave called a “multi-bounce” which occurred when the radar wave was reflected off of the rotating blade, on to the turbine tower, and back off of the blade on its way back to the radar.⁵⁹

The report cited trials undertaken by the United Kingdom, which it found to be consistent with observations made at U.S. radar sites, which determined that significant interference from a fourteen turbine wind farm located around 7 kilometers (4.4 miles) from the radar site had caused a degradation in detection performance by the radar system.⁶⁰ As a result of that study, the UK’s Ministry of Defense (MoD) determined that it needed to be consulted on any proposal for wind turbines which would be closer than 60% of the maximum instrumented range of military radars.⁶¹

Following complaints, the UK conducted further studies which resulted in observation of several concurrent issues, and ultimately evidenced the “most significant operational effect of wind turbine farms on air defense operations.”⁶² Following the latter studies, the MoD altered its earlier stated requirements to mandate that any wind development proposal that fell within the radar line of sight of a defense installation be required to consult with the MoD, regardless of distance.⁶³ Because the radar systems in the UK operated on “the same basic principles” as radars used by U.S. air defense, the DoD determined that it “would be reasonable to expect that similar performance degradation would occur for U.S. systems.”⁶⁴ The DoD also cited limited testing performed in King Mountain, Texas and Tyler, Minnesota, which it determined would lead to different conclusions about

57. *Id.* at 28.

58. *The Doppler Effect*, THE PHYSICS CLASSROOM (last visited May 28, 2018), <http://www.physicsclassroom.com/class/waves/Lesson-3/The-Doppler-Effect>.

59. *Id.* at 30.

60. *Id.* at 32.

61. *Id.* at 33.

62. *Id.*

63. *Id.* at 34.

64. *Id.* at 36.

the impacts of wind farms on the performance of radar (King Mountain, Texas), and that “remedial measures employed to mitigate one challenge can create other forms of degradation,” (Tyler, Minnesota).⁶⁵

To rebut claims that no problems have arisen at numerous U.S. radar systems with wind farms in their lines of sight, the DoD pointed to proprietary information it had received for at least one U.S. ATC radar which showed evidence that “a large wind farm in the radar line of sight” actually causes “significant loss of primary radar tracking capability for aircraft flying over that farm.”⁶⁶

The DoD went on to provide recommendations for mitigation approaches, which it defined to include “either an approach that completely prevents any negative impact from occurring or an approach that sufficiently attenuates any negative impacts so that there is no significant influence on the capability of an air defense or missile warning radar.”⁶⁷

Its first suggestion was to avoid line of sight problems by:

- a. Regulating wind turbines’ proximity to radar systems based on their elevation and the corresponding height of its tallest blade,⁶⁸
- b. “Terrain masking,” which places elevated terrain between the radar system and the closest turbine, thereby redirecting the line of sight to avoid most of the turbines which would otherwise fall within the line of sight;⁶⁹
- c. “Terrain relief,” which places the radar system on a high elevation such as “a mountain ridge overlooking a valley that contained wind turbines,”⁷⁰; and
- d. Software which would allow aircraft radar signatures to be injected into digital processors on modern radars, allowing the “assessments of the ability of that radar to detect and track aircraft” under real world conditions which may otherwise hinder performance.⁷¹

The second potential mitigation area approached by the DoD was the suppression of wind turbine radar signatures. The DoD pointed to the use of

65. *Id.* at 36-40.

66. *Id.*

67. *Id.* at 41.

68. *Id.* at 42.

69. *Id.*

70. *Id.* at 44.

71. *Id.*

such radar signature suppression technologies on military aircraft and questioned whether such techniques could be employed on wind turbines for a similar effect.⁷² The DoD identified two potential problems with such an approach, however. First, the radar cross section of a utility wind turbine would need to be reduced by 30 to 40 decibels—equivalent to anywhere from 1/1,000 to 1/10,000 of the current radar cross section—in order to make the turbine “‘relatively invisible’ to most air defense and missile defense warning radars.”⁷³ Second, radar signature suppression typically means modifications to the shape of objects, along with the use of special types of materials in constructing such objects.⁷⁴ The DoD reasoned that certain changes (like adjusting the taper of a turbine tower) could be cost-neutral to developers—though other adjustments (such as the use of radar-absorbing material in construction) would “‘significantly increase both first and life cycle costs” due to the expensive nature of the materials and their tendency to be less weather durable than what is currently used.⁷⁵ Ultimately, the DoD classifies mitigation via suppression of radar signatures as “unproven, requiring further development and validation testing.”⁷⁶

The DoD also examined technological developments which could alleviate the issues, and determined that while such endeavors were promising, they ultimately were classified in the same manner as techniques to suppress radar signatures.⁷⁷

Finally, the DoD considered the potential of mitigating the effects by using a second radar to provide overlapping coverage.⁷⁸ Ultimately however, those mitigation techniques presented a host of issues which made them “immature and . . . [un]proven mitigations,” at the time of the DoD’s study.⁷⁹

2. Other Potential Impacts on Defense Readiness

While radar obstruction was the primary focus of the DoD’s report, the Department also issued findings on four other potential impacts wind farms may have on defense readiness in the U.S.

72. *Id.* at 45.

73. *Id.*

74. *Id.*

75. *Id.*

76. *Id.*

77. *Id.* at 46.

78. *Id.*

79. *Id.* at 47.

a) Overflight and Obstruction

Perhaps the most obvious of the potential issues that come with siting a wind farm near an aviation facility, the DoD had concerns with “potential increased risk due to the increased likelihood of encountering tall vertical structures during low altitude flight operations.”⁸⁰ There are some restrictions already in place to mitigate this issue, giving military installations assignments to manage certain sections of airspace which lead to proposed wind turbines above a certain elevation going through a Federal Aviation Administration evaluation process that would notify the military installations of any potentially affected military flying routes.⁸¹

b) Security

A less obvious and minimally invasive risk to operations at military installations is the potential security risk that would come with the influx of construction workers and operators working on a wind farm sited near a military installation.⁸² This is no different from the potential security issues posed by any construction project undertaken near a military installation, and the DoD did not anticipate any special challenges to be posed by wind farm development.⁸³

c) Signature

The DoD raised a concern that the particular electromagnetic signature issued by wind turbines may have a detrimental impact on various DoD systems, such as “electronic warfare activity for communications, surveillance, threat, and radar systems,” as well as space launch activities and telemetry operations.⁸⁴ Such impact could be heightened in places where the DoD conducts “high fidelity developmental testing and evaluation in the electromagnetic spectrum.”⁸⁵

d) Environment

The DoD pointed to its ongoing efforts at many defense installations to relieve encroachment and increase conservations, and it raised concerns that

80. *Id.* at 50.

81. *Id.*

82. *Id.*

83. *Id.*

84. *Id.*

85. *Id.*

development of wind farms near such installations may not be compatible with those efforts.⁸⁶

3. Conclusion

Ultimately, the DoD's conclusion regarding the siting of wind farms near military installations was as follows:

Given the expected increase in the U.S. wind energy development, the existing siting processes as well as mitigation approaches need to be reviewed and enhanced in order to provide for continued development of this important renewable energy resource while maintaining vital defense readiness.⁸⁷

The DoD's detailed report sends a clear message to Congress that where possible, steps should be taken to mitigate any effect wind farms can have on the defense readiness capabilities of military installations throughout the country.

B. DoD Siting Clearinghouse

In 2011 Congress passed the Ike Skelton National Defense Authorization Act for Fiscal Year 2011⁸⁸ (NDAA), which—among other things—created the Department of Defense Siting Clearinghouse (the Clearinghouse) as an arm of the Office of the Assistant Secretary of Defense for Energy, Installations, and Environment.⁸⁹ The legislation lists the Clearinghouse under a section titled “Study of Effects of New Construction of Obstructions on Military Installations and Operations”⁹⁰ and, along with subsequent amendments, laid out the guidelines for DoD objections to energy project proposals—focusing particularly on the agency's engagement with the FAA.⁹¹ Each of the three departments of the U.S. military (Departments of the Army, Navy, and Air Force) sits on the Clearinghouse Board of Directors, and the Clearinghouse states its mission as providing a “timely, transparent, and repeatable process that can evaluate potential impacts and explore mitigation options.”⁹²

86. *Id.* at 51.

87. *Id.* at 57.

88. 124 Stat. 4137.

89. *Id.*

90. *Id.* at § 358.

91. DoD SITING CLEARINGHOUSE, *supra* note 55.

92. *Id.*

Essentially, the Clearinghouse exists to facilitate communication between state-run siting processes and the DoD to prevent obstructions that would affect military readiness. The Clearinghouse is not a regulatory agency and serves more of an advisory role—particularly to state legislatures, who control the actual siting of wind projects. The Clearinghouse does perform a federally required formal review of all projects filed through the Secretary of Transportation under the FAA obstruction evaluation process,⁹³ but also encourages any energy proponent to seek an informal review with it before moving forward with their project.⁹⁴

The Clearinghouse has seen a recent jump in these informal reviews, performing over 120 in 2016 after having done less than 40 in 2015.⁹⁵ The Clearinghouse is generally unconcerned about turbines shorter than 200 feet, and rarely finds an issue with the projects that it reviews.⁹⁶ If an issue is presented though, the DoD will direct the energy proponent to the proper stakeholders for further discussion, and if the risk is deemed unacceptable and no option has acceptably mitigated the issue, the DoD can recommend to the Secretary of Transportation that the FAA issue a Determination of Hazard—which may only be issued by the Secretary (or deputy secretary) of Defense, who would then notify the appropriate Secretary and the Congressional Defense Committee.⁹⁷

The Clearinghouse obviously constitutes the federal government's current attempt at inserting itself into a regulation process in which it has significant interests, but no real power. The informal review process lacks teeth and relies heavily on state cooperation.

IV. USA Wind Energy & Regulation

Every state takes a different tack in approaching wind farm regulation. The federal government urges each one to coordinate with the DoD and representatives from nearby military installations in setting their regulations and throughout the permitting process to prevent encroachment—

93. 49 U.S.C. § 44718 (2018).

94. *DoD Siting Clearinghouse Reviews*, DOD SITING CLEARINGHOUSE, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE FOR ENERGY, INSTALLATIONS, AND ENVIRONMENT (last visited Jan. 27, 2018), <https://www.acq.osd.mil/dodsc/contact/dod-review-process.html>.

95. *Id.*

96. *Frequently Asked Questions*, DOD SITING CLEARINGHOUSE, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE FOR ENERGY, INSTALLATIONS, AND ENVIRONMENT (last visited Jan. 27, 2018), <https://www.acq.osd.mil/dodsc/about/faq.html>.

97. *Id.*

intentional or unintentional—but there is no federal requirement that any agency be included in a state-level permitting process.

A. Installed Wind Capacity

The chart below is ordered to show the hierarchy of installed wind capacity from state to state in the U.S. The fourth and fifth columns allow for quick comparison and trend-seeking regarding wind capacity and military spending in each state. This chart, and the relationships it shows between wind capacity and military spending, will be used to structure the following analysis of states' regulatory schemes for the siting of wind farms, particularly those near military installations. The numbers below regarding military spending come from a Department of Defense Economic Adjustment Study conducted in 2015.

State	Installed Wind Capacity ⁹⁸	% of State Energy Production from Wind ⁹⁹	% of Total GDP from Military Installations (FY 2015) ¹⁰⁰	Total Defense Spending (FY 2015) ¹⁰¹
Texas	21,450 MW	12.6%	2.2%	\$37.9 Billion
Iowa	6,974 MW	36.6%	.8%	\$1.4 Billion
Oklahoma	6,645 MW	25.1%	2.6%	\$4.7 Billion
California	5,561 MW	6.9%	2.8%	\$49.3 Billion
Kansas	5,110 MW	29.6%	2.3%	\$3.3 Billion
Illinois	4,026 MW	5.7%	.9%	\$7 Billion
Minnesota	3,499 MW	17.7%	1.3%	\$4.3 Billion
Oregon	3,213 MW	12.1%	.6%	\$1.3 Billion
Washington	3,075 MW	7.1%	2.9%	\$12.6 Billion
Colorado	3,029 MW	17.3%	2.8%	\$8.7 Billion
North Dakota	2,996 MW	21.5%	1.4%	\$747.2 Million
Indiana	1,997 MW	4.8%	1.2%	\$3.9 Billion
New York	1,829 MW	2.9%	0.6%	\$1.3 Billion

98. *U.S. Installed and Potential Wind Power Capacity and Generation*, OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY (last visited Jan. 27, 2018), <https://windexchange.energy.gov/maps-data/321>.

99. *U.S. Wind Energy State Facts*, AMERICAN WIND ENERGY ASSOCIATION (last visited Jan. 27, 2018), <https://www.awea.org/statefactsheets>.

100. *Military's Impact on State Economies*, NATIONAL CONFERENCE OF STATE LEGISLATURES (Feb. 21, 2017), <http://www.ncsl.org/research/military-and-veterans-affairs/military-s-impact-on-state-economies.aspx>.

101. *Id.*

Michigan	1,760 MW	4.2%	0.6%	\$2.9 Billion
Wyoming	1,489 MW	9.4%	0.9%	\$370 Million
New Mexico	1,383 MW	10.9%	3.4%	\$3.1 Billion
Pennsylvania	1,369 MW	1.6%	1.9%	\$12.7 Billion
Nebraska	1,335 MW	10.1%	1.3%	\$1.5 Billion
South Dakota	977 MW	30.3%	1%	\$456.8 Million
Idaho	973 MW	15.2%	1%	\$643.3 Million
Maine	901 MW	13.9%	4.7%	\$2.6 Billion
Montana	695 MW	7.6%	1.1%	\$519 Million
West Virginia	686 MW	1.9%	0.7%	\$527 Million
Missouri	659 MW	1.4%	3.7%	\$10.6 Billion
Wisconsin	648 MW	2.3%	0.8%	\$2.3 Billion
Ohio	545 MW	1.1%	1.2%	\$6.9 Billion
Utah	391 MW	2.2%	2.2%	\$3.2 Billion
Arizona	268 MW	0.5%	3.4%	\$10 Billion
North Carolina	208 MW	0%	2%	\$9.8 Billion
Hawaii	206 MW	6.7%	9.8%	\$7.8 Billion
Maryland	191 MW	1.4%	5.7%	\$20.5 Billion
New Hampshire	185 MW	2.3%	2%	\$1.4 Billion
Nevada	152 MW	0.9%	1.6%	\$2.3 Billion
Vermont	119 MW	15.4%	1%	\$295.5 Million
Massachusetts	115 MW	0.7%	2.6%	\$12.2 Billion
Alaska	62 MW	3%	6.1%	\$3.3 Billion
Rhode Island	54 MW	0.5%	3.5%	\$2 Billion
Tennessee	29 MW	0%	0.8%	\$2.4 Billion
New Jersey	9 MW	0%	1.2%	\$6.6 Billion
Connecticut	5 MW	0%	3.8%	\$9.7 Billion
Delaware	2 MW	0%	1%	\$676.8 Million
Alabama	0 MW	0%	5.9%	\$12.2 Billion
Arkansas	0 MW	0%	1.2%	\$1.4 Billion
Florida	0 MW	0%	2%	\$17.6 Billion
Georgia	0 MW	0%	2.6%	\$12.6 Billion
Kentucky	0 MW	0%	4.7%	\$9 Billion
Louisiana	0 MW	0%	1.5%	\$3.8 Billion
Mississippi	0 MW	0%	4.9%	\$5.2 Billion
South Carolina	0 MW	0%	2.7%	\$5.3 Billion
Virginia	0 MW	0%	11.2%	\$53 Billion

It is important to note that there are four states with substantive laws on the books regarding wind farm siting near military installations—California, Washington, North Carolina, and Texas. These states are not the only ones with efforts to address the issue, but their laws are the most clear and substantive attempts to date. The analysis below will begin with those four then move through the rest of the country based on installed wind capacity and military spending.

B. Regulatory Schemes

The regulation of electricity generation generally has been left to the states since congress passed the Federal Power Act in 1935, leaving generation to the states.¹⁰² The standard set by that piece of legislation has transitioned into a reservation of authority over siting renewable energy generation facilities to the states as well.¹⁰³ What that means practically is that wind farm siting carries with it a hodge-podge of regulation across the country—regulations in various states make permitting a local zoning issue, a matter of concern for the public utilities commissions, or leave it to some sliding scale based on the size of the prospective facility.¹⁰⁴

First, a look at the states who have tackled the issue head on.

1. States with Positive Legislation Regarding Military/Wind Relations

a) California

With 5,561 MW of installed wind capacity (Fourth most in U.S.) and \$43.9 billion in total defense spending for fiscal year 2015¹⁰⁵ (Second most in U.S.) it comes as no surprise that California has made the most comprehensive effort to directly address these potentially conflicting industries, both of which are mammoths within its borders. California has the most extensive regulations on its books of any state, and began shaping its policy in 2002 with the passing of Senate Bill No. 1468, which required cities and counties to consider military readiness impacts when preparing or updating general plans for lands adjacent to or underlying military facilities and military aviation routes and airspace.¹⁰⁶ The Bill also led to the publishing of a handbook regarding community planning and military

102. Burke, *supra* note 10 at 21.

103. *Id.*

104. *Id.* at 22.

105. *Military's Impact on State Economies*, *supra* note 101.

106. S.B. 1468, 2001-2002 Reg. Sess. (Cal. 2002).

compatibility, which was most recently updated in 2017.¹⁰⁷ That handbook states its purpose as assisting cities and counties “in addressing military compatibility issues when developing, updating or significantly amending their general plans.”¹⁰⁸

Later in 2002, an assembly bill required notice to military agencies of any proposed projects within two miles of military installations or underlying training routes and special use airspace.¹⁰⁹ In 2004 a bill was passed requiring the development of a conflict resolution process for proposed projects which would potentially effect military readiness, as well as DoD notification of any change to a community’s general plan if a project would be within 1,000 feet of a military installation, under a low-level flight path, or within special use airspace.¹¹⁰

California has made it particularly easy for developers to identify any potential conflicts with the DoD by creating a website called the California Military Land Use Compatibility Analyst.¹¹¹ The website is accessible by anyone, and contains an interactive map showing military land use and allowing developers to see how their proposed project would interact.

Over time California has gone even further, designating the state Office of Planning and Research as a liaison to the Department of Defense “in order to facilitate coordination regarding issues that are of significant interest to the state and the department.”¹¹²

California’s bevy of legislation is an ideal example of the goals of the DoD’s clearinghouse—state cooperation with federal agencies to facilitate the continued growth of renewable energy and military readiness within the state. The procedures implemented by California provide a template for other state legislatures in the future that is a healthy alternative to the insertion of federal governance into an area that is historically reserved to the states.

b) Washington

Washington, with its 3,075 MW of installed wind capacity (Ninth most in U.S.) and \$12.6 billion in total defense spending in fiscal year 2015

107. STATE OF CALIFORNIA GOVERNOR’S OFFICE OF PLANNING AND RESEARCH, COMMUNITY AND MILITARY COMPATIBILITY PLANNING HANDBOOK, (2013).

108. *Id.*

109. A.B. 1108, 2001-2002 Reg. Sess. (Cal. 2002).

110. S.B. 1462, 2003-2004 Reg. Sess. (Cal. 2004).

111. *California Military Land Use Compatibility Analyst*, STATE OF CALIFORNIA (last visited Jan. 27, 2018), <http://cmluca.gis.ca.gov/>.

112. CAL GOV. CODE § 65040.14 (2018).

(Eighth most in U.S.) addressed the issue for the first time in 2011.¹¹³ In Washington, siting of electrical generating facilities over 350 MW (and smaller if they choose to opt-in to the review process) are required to undergo the Energy Facility Site Evaluation Council (EFSEC) certification process.¹¹⁴ In 2011 the state legislature voted unanimously to require that when the ESFEC receives a siting application for a facility connected to a transmission line of at least 115 kilovolts, it must provide written notification to the DoD including 1) a description of the proposed facility, 2) the location of the proposed facility, 3) the placement of the energy resource on the site, 4) the date and time at which the city or town must receive comments, and 5) contact information for the city or town permitting authority, as well as the applicant.¹¹⁵

The stated purpose of the written notification is to give the DoD a chance to comment, and “to identify potential issues . . . before a permit application is approved.”¹¹⁶ This legislation is less comprehensive than California’s scheme, but still evidences a good faith effort on Washington’s part to facilitate open communication with the DoD regarding its expanding alternative energy operations.

c) North Carolina

North Carolina has by far the rockiest current relationship with the reconciliation of wind energy and military installations. The fact that it had prior legislation on the record addressing the issue is surprising, given that North Carolina’s 208 MW of installed wind capacity (29th in U.S.) provides less than 1% of the state’s energy production.¹¹⁷ It did, however, pass legislation in the 2013 legislative session which required consideration of any effects on military operations and readiness at every point in the permitting process for wind energy siting.¹¹⁸

Lately though, the wind industry has hit a speed bump in the state. In July, 2017 the governor signed into law a bill that aimed to boost solar production in the state, but in turn placed an 18 month moratorium on the issuance of permits for wind farms in the state.¹¹⁹ The Governor attempted

113. WASH. REV. CODE § 35.63.270 (2018).

114. WASH. REV. CODE §§ 80.50.060, 80.50.020 (2018).

115. WASH. REV. CODE § 35.63.270 (2018).

116. *Id.*

117. AMERICAN WIND ENERGY ASSOCIATION, *supra* note 99.

118. N.C. GEN. STAT. § 21C.

119. Krysti Shallenberger, *North Carolina Governor Signs Solar Bill, Targets Wind Moratorium With Executive Order*, UTILITY DIVE (July 27, 2017), <https://www.utilitydive.com>.

to blunt the impact of the bill by then issuing an Executive Order instructing local agencies to expedite the review and processing of permits in order to issue new ones as soon as possible, but the Order explicitly states that it does not override the new legislation's moratorium.¹²⁰

The language of House Bill 589 shows that the purpose of the moratorium is explicitly to consider further the “impact of future wind energy facilities and energy infrastructure on military operations, training, and readiness.”¹²¹ The state's wind energy potential is great (77,642 MW¹²²), as evidenced by the opening of North Carolina's first major wind farm—the Amazon Wind Farm U.S. East—in early 2017.¹²³ The current legislation, though, shows an attitude leaning heavily towards protecting military operations over the production of alternative energy. Where California presents an idealistic relationship for the federal government, North Carolina represents the opposite—a state wielding its regulatory authority to blunt the evolution of alternative energy sources in the name of protecting a federal interest. Issuing a moratorium based on perceived potential problems, as opposed to a system requiring cooperation with federal entities to ensure their concerns are not ignored, would be putting the cart before the horse in any state with wind energy potential.

d) Texas

Texas, whose 21,540 MW of installed wind capacity is the most in the U.S., has also addressed the conflicting industries via legislation, and did so more in line with North Carolina than California or Washington. The state also saw \$37.9 billion in total military spending in fiscal year 2015 (third in U.S.), making this conflict a bit of a clash of the titans within the state. In May of 2017, the Texas legislature enacted legislation ending tax exemptions for any wind farms installed or constructed within 25 miles of any military aviation facility.¹²⁴ In support of the law, legislators pointed to

com/news/north-carolina-governor-signs-solar-bill-targets-wind-moratorium-with-exec/448091/.

120. STATE OF NORTH CAROLINA, GOVERNOR ROY COOPER, EXECUTIVE ORDER NO. 11, PROMOTING WIND ENERGY DEVELOPMENT (July 27, 2017).

121. H.B. 589, Session 2017 (N.C. 2017).

122. *Wind Energy in North Carolina*, OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY (last visited Jan. 27, 2018), <https://windexchange.energy.gov/states/nc>.

123. Elizabeth Ouzts, *In North Carolina, Wind Energy Proponents Already Gearing Up for Next Battle*, SOUTHEAST ENERGY NEWS (August 3, 2017), <http://southeastenergynews.com/2017/08/03/in-north-carolina-wind-energy-proponents-already-gearing-up-for-next-battle/>.

124. TEX. TAX CODE § 312.0021 (2018).

the economic boon provided by military installations, and the purported danger to those installations posed by wind farms.¹²⁵

Texas' all-or-nothing approach to the reconciliation of wind energy and military interests is not in line with the DoD Clearinghouse's stated approach, and—like North Carolina's legislation—threatens federal policy regarding the continuing expansion of alternative energy sources. The development here should be particularly troubling to the federal government, as it comes from the nation's top wind energy producer.

2. States with greater than 1,000 MW of installed wind capacity

The following states currently have at least 1,000 MW of installed wind capacity, but no laws on the books directly addressing the interaction between wind energy facilities sited near military installations and military readiness, or communication between the state and the DoD throughout the siting process. Most states delegate much of the siting process to local governments (cities, towns, municipalities, etc.) with some statewide Commission providing guidance and occasionally weighing in. The split between state and local governance is more pronounced in some than in others, and it is possible that various local regulations address the issue in some fashion.

At 1,000 or more MW of installed capacity, these states are more likely than the rest to see this issue crop up. For a snapshot of what these states do regulate, the National Conference of State Legislatures issues summaries of each state's legislative approach to wind farm siting.¹²⁶

125. Asher Price, *Texas House Limits Tax Breaks For Wind Turbines Near Military Bases*, THE AUSTIN AMERICAN-STATESMAN (May 22, 2017), <http://www.statesman.com/news/texas-house-limits-tax-breaks-for-wind-turbines-near-military-bases/5IOjpRF5bD5tcUvq4lnWLJ/>.

126. Jesse Heibel and Jocelyn Durkay, *State Legislative Approaches to Wind Energy Facility Siting*, NATIONAL CONFERENCE OF STATE LEGISLATURES (last visited May 28, 2018), <http://www.ncsl.org/research/energy/state-wind-energy-siting.aspx>.

State	Installed Wind Capacity¹²⁷
Iowa	6,974 MW
Oklahoma	6,645 MW
Kansas	5,110 MW
Illinois	4,026 MW
Minnesota	3,499 MW
Oregon	3,213 MW
Colorado	3,029 MW
North Dakota	2,996 MW
Indiana	1,997 MW
New York	1,829 MW
Michigan	1,760 MW
Wyoming	1,489 MW
New Mexico	1,383 MW
Pennsylvania	1,369 MW
Nebraska	1,335 MW

3. States with less than 1,000 MW of installed capacity

The following states currently have some level of installed wind capacity, but less than 1,000 MW, and no direct legislation addressing the interaction between military installations and wind farms installed nearby. North Carolina would fall into this group if not for its recent legislation, so while not obvious candidates to address the issue, it would not be unusual for the debate to arise here.

What was true for the states with 1,000 MW or greater is true for the following states as well—siting regulation is left largely to local governments. For a snapshot of what these states do regulate, the National

127. *U.S. Installed and Potential Wind Power Capacity and Generation*, *supra* note 99.

Conference of State Legislatures issues summaries of each state's legislative approach to wind farm siting.¹²⁸

State	Installed Wind Capacity¹²⁹
South Dakota	977 MW
Idaho	973 MW
Maine	901 MW
Montana	695 MW
West Virginia	686 MW
Missouri	659 MW
Wisconsin	648 MW
Ohio	545 MW
Utah	391 MW
Arizona	268 MW
Hawaii	206 MW
Maryland	191 MW
New Hampshire	185 MW
Nevada	152 MW
Vermont	119 MW
Massachusetts	115 MW
Alaska	62 MW
Rhode Island	54 MW
Tennessee	29 MW
New Jersey	9 MW
Connecticut	5 MW
Delaware	2 MW

128. *State Legislative Approaches to Wind Energy Facility Siting*, *supra* note 127.

129. *U.S. Installed and Potential Wind Power Capacity and Generation*, *supra* note 99

4. *States with no installed wind capacity*

There are still several states in the U.S. that have zero installed wind capacity for various reasons—ranging from unworkable climate or geography to a lack of interest. While, of course, these states do not likely have legislation addressing wind farm siting, some do, and others have regulation addressing the siting of other electricity producing utilities which would likely apply to wind farms if installed today.

The risk of a debate over this article’s central question breaking out in one of these states is slim to none, but their systems are worth including for reference sake. For a snapshot of what these states do regulate, the National Conference of State Legislatures issues summaries of each state’s legislative approach to wind farm siting.¹³⁰ The following States have 0 MW of installed wind capacity: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, South Carolina, and Virginia.¹³¹

V. *A New Found Need for Oversight*

There is no doubt that the debate about federalism has always been, and will always be, a vigorous one. States are loathe to give up rights which they have retained from a federal government which is viewed by some as ever expanding. However, the federal government must be granted the latitude to govern entities which are within its purview of governance—particularly those which directly benefit the states (and every American resident) directly. In his first inaugural address James Madison—one of the most prominent antifederalists, and a staunch opponent of a large standing military—promised to keep in mind that “an armed and trained militia is the firmest bulwark of republics”¹³² Balanced with the words of President George W. Bush, who boldly proclaimed in 2006 that America was “addicted to oil,” and set a goal of replacing 75 percent of America’s oil imports from the middle east with other energy sources by 2025,¹³³ the competing interests detailed in this article are brought into stark relief.

The systems established by California and Washington are perfect examples of state and federal cooperation to facilitate the twin aims of both immediate military readiness and the continued growth of alternative

130. *State Legislative Approaches to Wind Energy Facility Siting*, *supra* note 127.

131. *U.S. Installed and Potential Wind Power Capacity and Generation*, *supra* note 99

132. James Madison, President of the United States, Inaugural Address (March 4, 1809).

133. Elisabeth Bumiller and Adam Nagourney, *Bush: ‘America is addicted to oil’*, THE NEW YORK TIMES (Feb. 1, 2006), <http://www.nytimes.com/2006/02/01/world/americas/01iht-state.html>.

energy sources. A federal requirement that states pass legislation mandating some type of federal review of wind installations over 200 feet tall and within a particular range of an established military installation—such as the optional review currently encouraged by the DoD Clearinghouse, which rarely encounters issues with proposed wind farms—would be a reasonably unobtrusive way for all parties involved to ensure the continued security of both missions. It would also provide what has proven to be much needed assurance to state legislators who may not have a firm grasp on the issue, or the DoD’s position, and see the choice between wind or military as all or nothing within their state.

Federal oversight would, on its face, likely strike a chord with the very states it would benefit most—such as Texas or Oklahoma. However, the recent legislation passed by North Carolina shows exactly why it is necessary. The extreme measures taken by North Carolina in issuing a year-and-a-half long moratorium on the issuance of *any* wind farm permits shows that the fears espoused by the DoD have scared certain state legislatures more than the military itself.

North Carolina’s development over the last decade serves as the perfect cautionary tale in favor of some level of federal oversight. As recently as 2014 a law review article was published holding up North Carolina’s 2013 wind farm siting legislation as a model for other states to follow when considering military interest in wind siting.¹³⁴ H. Brendan Burke, a Commander in the U.S. Navy, wrote that “In North Carolina, recent experience suggests that military bases and wind energy development can coexist, even after implementation of [statewide regulation deferring to the DoD].”¹³⁵ Not four years after those words were written, the state issued its permit moratorium.

The DoD Clearinghouse readily admits that it is supportive of renewable energy, seeking not the end of wind energy development, but “Communication, early and often,” which it says “is critical in ensuring timely resolution of concerns that support both developers and military.”¹³⁶

That particular legislatures evidence a mutually exclusive view of military presence and wind energy development shows a disconnect between those bodies and the military. Minimal federal oversight could address the issue in a manner that offers assurance to nervous legislators, who understandably do not want to see the exodus of military spending

134. Burke, *supra* note 10 at 57.

135. *Id.*

136. DoD SITING CLEARINGHOUSE, *supra* note 55.

which is vital to their local economies in the name of wind farms, which offer wind density at least 22 times less than that of a marginal gas or oil well (which are plentiful in a state such as Texas).¹³⁷

VI. Conclusion

500-foot tall wind turbines with blades spinning fast enough to viably affect sensitive military radar equipment are a far cry from the energy generating facilities that were the origin of the power structure still governing utility facilities today. The oil embargo of the 1970's caused the spark, and rapidly advancing technology has combined with a renewables-friendly domestic policy to fan that spark into the flame which this article seeks to address. This fire is one that needs federal action to be contained. The current system empowers local legislatures who lack understanding of the military's position to undermine federal energy policy. A small step taken at the federal level could help end the tilting at windmills by some state legislatures before others decide to follow suit.

137. Robert Bryce, *The Real Problem With Renewables*, FORBES (May 11, 2010), <https://www.forbes.com/2010/05/11/renewables-energy-oil-economy-opinions-contributors-robert-bryce.html#3b47fdee1403>.