Renewable Energy Policy in Massachusetts: How the Commonwealth Should Build Upon the Success of the Green Communities Act of 2008

"With the passage of the Green Communities Act in 2008 and subsequent related actions, the Commonwealth made a firm commitment to improving its energy portfolio, reducing its energy-related environmental impact and attracting new investment . . . . [T]hat commitment has paid off . . . ."[1]

I. INTRODUCTION

Widespread variation in state and local renewable energy policies causes a regulatory patchwork of permitting requirements and policies associated with the development of renewable energy.[2] This leads to uneven promotion of renewable energy development and drives up soft costs—such as permitting fees and filing requirements—that can create unintentional barriers to market growth.[3] Policies adopted by some states and local jurisdictions, however, provide innovative financial incentives and streamlined permitting procedures, which can serve as models for renewable energy policies across the United States.[4] Many states attempted to address impediments to renewable energy development by streamlining the permitting process for renewables.[5] Such

1. *Solar Energy Industries Association (SEIA) Testimony: Hearing on H. 3901 & S. 2019 Before the Joint Comm. on Telecomm., Utilities, and Energy*, 188th Leg. (Mass. 2014) (statement of SEIA executive, Fred Zalcman, testifying in favor of legislation to lift net metering cap).

2. Laurel Passera, *How To Initiate Solar Permitting Reform in Four Easy Steps*, RENEWABLE ENERGY WORLD (Sept. 13, 2013), http://www.renewableenergyworld.com/rea/blog/post/2013/09/how-to-initiate-solar-permitting-reform-in-four-easy-steps, *archived at* http://perma.cc/WS4B-M4TD (observing large number of local jurisdictions leads to widespread variations of local processes). With fifty states, 18,000 municipalities, and over 25,000 local jurisdictions in the United States, the potential for widespread variation of local renewable energy regulations and procedures is evident. *See id.*; *see also* ASES Webmaster, *July 3: Streamlined Solar Permitting*, AM. SOLAR ENERGY SOC'Y (Aug. 5, 2013), http://www.ases.org/july-3-streamlined-solar-permitting/, *archived at* http://perma.cc/3PGA-66A8 (observing solar permitting requirements vary dramatically across municipalities).

3. *See* Passera, *supra* note 2 (observing differing permit requirements drive up costs for developers creating barriers); *see also* Zachary Shahan, *Permitting—A Nightmare for the US Solar Industry*, CLEANTECHNICA (Dec. 23, 2012), http://cleantechnica.com/2012/12/23/permitting-a-nightmare-for-the-us-solar-industry/, *archived at* http://perma.cc/YFK4-NGES (noting permit processes vary widely and usually involve multiple agencies).

4. *See* Passera, *supra* note 2 (discussing innovative streamlined permitting procedures).

5. *See* OR. REV. STAT. § 215.439 (2011) (providing solar photovoltaic installation as-of-right permitted use in residential zones); *see also* An Act Relating to Net Metering and the Definitions of Capacity, ch. 125, 2012 Vt. Acts & Resolves, http://legislature.vermont.gov/statutes/section/30/005/00219a, *archived at* http://perma.cc/9QX8-LECK (deeming certain solar net metering systems for public good of state); WIS.

statewide policies can take the form of: enabling statutes, which provide municipalities with model ordinances related to renewable energy; incentives, such as tax breaks and rebates; or state Renewable Portfolio Standards (RPS), which require a certain amount of the state's electricity be produced by renewable sources.[6]

With the adoption of the Green Communities Act (GCA) of 2008, former Governor Deval Patrick set forth his ambitious goal to put Massachusetts among the nation's leaders in renewable energy production.[7] Massachusetts further developed its renewable energy policies beyond the GCA with additional legislative and regulatory changes, which includes pending legislation to further improve the permitting processes for wind development and to provide financial incentives for solar development.[8]

Thanks in part to the GCA, the renewable energy industry in Massachusetts is thriving at an all-time high; the Commonwealth, however, must build upon this success by simplifying certain processes and creating further incentives for continued development.[9] Massachusetts already ranks among the nation's leaders in installed solar capacity, due to ambitious policy goals supported by

ADMIN. CODE PSC § 128 (2012) (promulgating rules for development of wind energy systems).

6. *See* Me. State Planning Office Model Wind Energy Ordinance (Aug. 27, 2009), https://www.maine.gov/dacf/municipalplanning/docs/ModelWindEnergyFacilityOrdinance.pdf, *archived at* https://perma.cc/T87X-9KUV [hereinafter Me. State Planning Office] (setting forth model ordinance for development of wind energy facilities); S.D. CODIFIED LAWS § 43-13-16 to -24 (2010) (providing rules relative to wind energy easements); VA. CODE ANN. § 67-103 (2011) (establishing role of local governments in achieving Virginia's energy policy); DEL. CODE ANN. tit. 29, § 8060 (2009) (restricting local governments from enacting certain restrictions on wind energy development).

7. *See* Green Communities Act, ch. 169, 2008 Mass. Acts, https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter169, *archived at* https://perma.cc/ST27-NJKM (demonstrating Massachusetts goal of improving renewable resources).

8. *See* Jay Fitzgerald, *Report Cites Benefits from Mass. Green Campaign*, BOS. GLOBE (Mar. 4, 2014), https://www.bostonglobe.com/business/2014/03/04/green-communities-act-yields-modest-economic-benefits-says-study/HyqJARJ31bBkDh85AfxMVP/story.html (reporting on GCA and other related initiatives). The former state Secretary of Energy and Environmental Affairs, Richard Sullivan, Jr., points to the GCA, the Clean Energy Jobs Act, and the Global Warming Solutions Act as examples of energy and environmental initiatives passed during the Patrick administration. *See id.*; *see also infra* Parts II.C.4-D.4 (discussing pending legislation and proposed regulations in Massachusetts).

9. *See* John F. Kerry & Philip Hammond, *Smart Energy Policy Is a Win for the World*, BOS. GLOBE (Oct. 9, 2014), http://www.bostonglobe.com/opinion/2014/10/08/smart-energy-policy-win-for-world/NoyTt9cu0tELNKKh5VFsjO/story.html (noting growing Massachusetts clean technology industry); Erin Ailworth, *Studies Cite Gains in Mass. Renewable Energy Industry*, BOS. GLOBE (Sept. 17, 2013), http://www.bostonglobe.com/business/2013/09/17/boston-tops-energy-efficiency-ranking-shows/e0YgNTajPTvgR5QiTbnq0L/story.html (reporting on growing clean energy sector in Massachusetts). According to Kerry, the clean tech industry is a $10 billion sector in the Massachusetts economy and growing. *See* Kerry & Hammond, *supra*. Clean energy sector job growth in Massachusetts has grown 47% since 2010, increasing by 10.5% in the past year. *See id.* It is now comprised of over 5,800 firms employing nearly 89,000 people. *See id.*; *see also* TRC ENV. CORP., RENEWABLE ENERGY SITING STUDY ES-1 (Apr. 2009), http://www.mass.gov/eea/docs/doer/renewables/wind/wind-siting-study-04-15-09.pdf, *archived at* http://perma.cc/V9B4-RUYR (concluding Massachusetts can encourage development of wind power projects and recommending course of action).

aggressive subsidy and incentive programs that should be continued and strengthened.[10] Although Massachusetts streamlined the permitting process for the largest capacity wind energy projects, this consolidated process should also be available to smaller capacity projects.[11]

Part II.A of this Note will discuss the ways states and local governments regulate and promote renewable energy through permitting, siting, incentives and subsidies for developing renewable energy.[12] Part II.B will then analyze the policies implemented in Massachusetts through the GCA, subsequent legislation, and regulations.[13] Part II.C will focus on the permitting and siting of wind in Massachusetts and pending legislation to streamline those procedures.[14] Part II.D will then consider the various incentives and subsidies available for solar energy development in Massachusetts.[15] Part II.E will discuss various constitutional challenges to state and local renewable energy policies.[16] Part III will analyze and propose further steps Massachusetts can take to build upon the successes of the GCA to continue promoting renewable energy development.[17] Part IV will then conclude that the Commonwealth's renewable energy policy is still evolving and, by building upon the successes of the GCA, Massachusetts will continue to lead the nation in this renewable energy development.[18]

II. HISTORY

A. State and Local Regulation of Renewable Energy

In the United States, the power to regulate land use and its natural resources

10. *See 2014 Mass. Policy Priorities: Hearing on S. 2019 & H. 3901 Before the Joint Comm. on Telecomm., Utilities, and Energy*, 188th Leg. (Mass. 2014) [hereinafter *Mass. Policy Priorities*] (statement of representatives from New England Clean Energy Council) (Janet Gail Besser testifying in favor of increasing current net metering cap). "Solar development has seen tremendous growth in Massachusetts in recent years due in large part to favorable state policies such as net metering and solar renewable energy credits (SRECs), which have been instrumental in attracting new developers and investors that have brought projects, jobs and customer savings to the state." *See id.*; *see also infra* note 99 and accompanying text (comparing Massachusetts with other states in installed solar capacity).

11. *See* HOWARD BERNSTEIN ET AL., MASS. DIVISION OF ENERGY RESOURCES, RENEWABLE ENERGY & DISTRIBUTED GENERATION GUIDEBOOK 44 (Apr. 2001), http://www.mass.gov/eea/docs/doer/pub-info/guidebook.pdf, *archived at* http://perma.cc/N6FU-6D8X (discussing consolidated review process for large-scale energy facility projects of 100 MW and greater).

12. *See infra* Part II.A (discussing state and local regulation of renewable energy).

13. *See infra* Part II.B (discussing Massachusetts and GCA).

14. *See infra* Part II.C (discussing wind facility siting and permitting throughout New England and in Massachusetts).

15. *See infra* Part II.D (discussing incentives for solar energy development throughout New England and in Massachusetts).

16. *See infra* Part II.E (discussing constitutional challenges to renewable energy policies).

17. *See infra* Part III (discussing GCA success so far and wind and solar development going forward in Massachusetts).

18. *See infra* Part IV (arguing Massachusetts as nation leader for renewable energy policies).

lies primarily with the states.[19] States in turn delegate much of this land use control to local governments.[20] Thus, a regulatory patchwork of primarily local ordinances, state laws, and federal laws dictates land use decision making throughout the nation.[21]

Many states adopted state siting laws to coordinate, expedite, and streamline the permitting and licensing process for traditional large-scale power plants.[22] Renewable energy facility siting is confronted with a number of challenges under this existing power plant siting framework.[23] Of the states with centralized authorities, most renewable energy facilities are not large enough to qualify for this expedited permitting process.[24] In states that primarily rely on local governance for energy siting, the local approval process can be lengthy, costly, and unpredictable.[25] In either case, the process for siting most renewable energy facilities requires a long list of separate state and local permit applications with no single point of contact.[26]

States have been forceful drivers of the recent rise in renewable innovation, specifically through enactment of important land-energy rules.[27] Emerging

19. *See* U.S. CONST. art. I, §§ 8, 10 (establishing relationship between federal government and state governments); John R. Nolon, *Historical Overview of the American Land Use System: A Diagnostic Approach To Evaluating Governmental Land Use Control*, 23 PACE ENVTL. L. REV. 821, 821 (2006) (evaluating land use law in United States). State authority to regulate land use is derived from states' police power, but Congress maintains some control under the Commerce Clause. *See* Uma Outka, *The Renewable Energy Footprint*, 30 STAN. ENVTL. L.J. 241, 254-55 (2011) (explaining states' police power).

20. Daniel R. Mandelker, *Fred Bosselman's Legacy to Land Use Reform*, 17 J. LAND USE & ENVTL. L. 11, 11 (2001) (discussing relationship between states and local governments in relation to land use control).

21. *See* Craig Anthony Arnold, *The Structure of the Land Use Regulatory System in the United States*, 22 J. LAND USE & ENVTL. L. 441, 446-47 (2007) (describing structure of land use regulatory system).

22. *See* Outka, *supra* note 19, at 257-58; 5-11 FRANK P. GRAD, TREATISE ON ENVIRONMENTAL LAW § 11.02[2] (Matthew Bender ed., 2009). In the 1970s, many states began adopting state siting laws to assign ultimate power plant siting decisions to a state agency in order to coordinate and expedite permitting, licensing, and streamline challenges to site approvals. *See* Outka, *supra* note 19, at 257-58. Such state siting laws maintained local influence on energy siting by incorporating local involvement in the process to ensure consistency with local regulation. *See id.* Still, roughly half the states have not altered the local land use process for energy siting. *See id.*

23. *See* Outka, *supra* note 19, at 266 (outlining four reasons why renewable energy poorly matched with existing siting frameworks); GRAD, *supra* note 22 (discussing land use issues associated with power production).

24. *See* Outka, *supra* note 19, at 266-67; GRAD, *supra* note 22 (discussing land use problems inherent in power production). In states with provisions to consolidate some or all aspects of project siting review for electric generation above a certain threshold size, these reviews are handled by a single "one-stop shop" agency that issues a single consolidated approval incorporating any necessary conditions from relevant agencies. *See* TRC ENV. CORP., *supra* note 9, § 2.1 (discussing case of consolidated approval).

25. *See* Outka, *supra* note 19, at 267 (outlining four reasons why renewable energy poorly matched with existing siting frameworks); GRAD, *supra* note 22 (discussing land use problems related to power production). Where there is no consolidated process, permitting issues are generally handled separately, with some addressed at the local level and others addressed at the state level in a process of multiple permit review. *See* TRC ENV. CORP., *supra* note 9, § 2.1 (stating variance regarding permitting issues).

26. *See* Outka, *supra* note 19, at 266-67 (discussing challenges to renewable energy development from existing siting framework); GRAD, *supra* note 22 (discussing land use issues related to power production).

27. *See* Garrick B. Pursley & Hannah J. Wiseman, *Local Energy*, 60 EMORY L.J. 877, 911 (2011)

renewable energy siting approaches seek to expedite and simplify the permitting process through synchronizing regulations, reducing public participation, and condensing the project review period.[28] On the other hand, some states have enacted enabling legislation clarifying that it is the municipalities that have the authority to regulate renewables.[29] Such statutes may require accommodation of renewables through local codes by directing the content of local renewable energy regulation through model ordinances or preempting local governments from attempting to unreasonably restrict or prohibit renewable energy siting.[30]

In addition to state policies, many counties and municipalities seek to promote renewable energy through their own ordinances and bylaws.[31] To better reach that goal, municipalities are moving toward rules that enable a smooth permitting and installation process for renewable energy facilities.[32]

(discussing state directives promoting renewable innovation).

28. *See* Outka, *supra* note 19, at 270-74 (explaining permitting process). Regulatory barriers and permitting delays routinely inhibit project development and thus, many states are seeking to expedite project review and permitting by enacting legislation to create a "one-stop permitting process for renewable [energy] projects." *See id.* For example, Maine enacted a law in 2011, providing for expedited permitting of wind energy development. *See* ME. REV. STAT. tit. 35-A, §§ 3451–3458 (2013). In 2010, Florida made renewable energy projects eligible for expedited permitting. *See* 2010 Fla. Laws 92-98 (amending section 403.973). A 2008 Hawaii statute provides for coordinated permitting and siting and a twelve-month time frame for the review of renewable energy projects. *See* HAW. REV. STAT. § 201N (2008). Oregon enacted a simplified solar permitting process. *See* OR. REV. STAT. § 215.439 (2013). A 2012 Vermont statute establishes an expedited permitting process for solar projects under 15kW that would return a decision within 10 days, which increased from the previous limit of 5kW. *See* VT. STAT. ANN. tit. 30, § 219a(c) (2013). In 2011, Wisconsin implemented different sets of comprehensive siting rules for wind energy generation facilities over and under 300 kW. *See* WIS. ADMIN. CODE PSC § 128 (2014).

29. *See* Pursley & Wiseman, *supra* note 27, at 912 (discussing how states affected innovation in renewable development through land-energy rule making). States confer varying degrees of zoning authority to local governments through state zoning enabling acts, but such acts do not necessarily provide authority to regulate renewable energy facilities. *See id.*

30. *See id.* (discussing state initiatives to promote renewable innovation); Outka, *supra* note 19, at 278-79 (explaining states' police power). A Massachusetts proposal would amend the 2010 Wind Energy Siting Reform Act to preempt local zoning for wind projects and approve siting through a centralized state board. *See* H.R. 2980, 188th Leg. (Mass. 2013) (reforming siting process for land based wind projects in Massachusetts). A 2009 Delaware law prohibited unreasonable public and private restrictions on wind development and set forth reasonable restrictions to be used when regulating residential wind energy development. *See* DEL. CODE ANN. tit. 29, § 8060 (2014); *see also* Me. State Planning Office, *supra* note 6 (setting forth model ordinance for wind energy facility development). In 2009, South Dakota passed measures enacting a model wind ordinance for turbines under seventy-five feet and encouraging flexibility by local governments to accommodate wind energy development. *See* S.D. CODIFIED LAWS § 43-13-21 (2013). In 2011, Virginia established guidelines for local solar and wind ordinances, requiring consistency with state energy policy and reasonable criteria protecting local interests while promoting wind and solar development. *See* VA. CODE ANN. § 67-103 (2011).

31. *See* Wang Mingyuan, Comment, *Government Incentives To Promote Renewable Energy in the United States*, 24 TEMP. J. SCI. TECH. & ENVTL. L. 355, 363 (2005) (discussing state and local laws, provisions, and programs). "[A]lmost every state, county, and city in the U.S. has its own set of laws designed to promote renewable energy." *Id.*

32. *See* Pursley & Wiseman, *supra* note 27, at 915 (discussing local initiatives and barriers to renewable energy development). Municipalities use zoning and building codes to streamline and simplify the siting and permitting process for renewable energy facilities. *See id.*

Local governments have the power to regulate wind and solar development through zoning bylaws and ordinances, building codes, and the inherent protection of public health and consumer interests.[33] Renewable energy ordinances reflect local needs and objectives regarding renewable energy within municipal boundaries.[34] Such ordinances also aid the development of safe facilities, which the community will embrace.[35] Developers are not able to install wind turbines and solar panels without adhering to local zoning laws and building codes.[36] Despite requiring adherence to local zoning laws, such land-energy rules can vary greatly from region to region.[37]

B. Massachusetts and the GCA

In July 2008, energy policy in Massachusetts changed significantly when former Governor Deval Patrick signed the GCA into law.[38] One major goal of this landmark legislation was to eliminate many of the long-standing obstacles—financial, regulatory, and otherwise—to building renewable power projects in Massachusetts.[39]

Many of the GCA's provisions are aimed at promoting quicker development

33. *See* U.S. DEPT. OF ENERGY, WIND AND WATER POWER PROGRAM: WIND ENERGY ORDINANCES (Sept. 2010), http://www.windpoweringamerica.gov/pdfs/policy/2010/wind_energy_ordinances.pdf, *archived at* http://perma.cc/2WG8-JXTT (providing overview of wind energy ordinances). Common local ordinances include zoning requirements to require special permits, setback requirements, noise ordinances, regulation of wind turbine shadow flicker, wetlands bylaws, aesthetics, impacts on local historic districts or sites, construction, and traffic impacts. *See* TRC ENV. CORP., *supra* note 9, at 2-1.

34. *See* U.S. DEPT. OF ENERGY, *supra* note 33 (discussing wind energy ordinances).

35. *See id.* (explaining how wind energy ordinances established).

36. *See* Pursley & Wiseman, *supra* note 27, at 907 (noting need for local land-energy rules). "The need to enable . . . local governments to reshape land use laws to accommodate distributed renewables—to create land-energy rules . . . is well documented." *Id.* This demand dates as far back as the mid-1970's when the American Bar Foundation attempted to identify possible legislative remedies at the federal, state, and local levels to reduce legal barriers to the use of solar energy systems. *See id.* at 908.

37. *See id.* at 914 (explaining legal barriers to local initiatives). Local government regulation of renewable energy runs the full spectrum from banning such facilities completely to active encouragement of such development. *See id*.

38. Green Communities Act, ch. 169, 2008 Mass. Acts, https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter169, *archived at* https://perma.cc/ST27-NJKM (relating to energy efficiency, renewable energy, curbing emissions, and establishing green communities program).

39. *See* Beth Daley, *State Starts a Green Era*, BOSTON.COM (July 3, 2008), http://www.boston.com/lifestyle/green/articles/2008/07/03/state_starts_a_green_era/?page=full (reporting on GCA's enactment). "[T]he GCA represented a significant shift in the state's energy policy, focusing on a number of economic, environmental, and public policy objectives . . . ." *See* PAUL J. HIBBARD ET AL., THE IMPACTS OF THE GREEN COMMUNITIES ACT ON THE MASSACHUSETTS ECONOMY: A REVIEW OF THE FIRST SIX YEARS OF THE ACT'S IMPLEMENTATION 1 (Mar. 2014), http://www.analysisgroup.com/uploadedfiles/publishing/articles/analysis_group_gca_study.pdf, *archived at* http://perma.cc/AG5G-TLH8 (providing overview of GCA). These objectives include reducing growth in the demand for electricity through investments in energy efficiency, expanding the ability of consumers to own and benefit from new energy-producing technologies, promoting growth in renewable energy-producing facilities, creating jobs in the renewable energy sector, and reducing the Commonwealth's dependence on fossil fuels produced out of state. *See id.*

of renewable energy sources.[40] One provision strengthens the RPS by requiring retail-electricity suppliers to purchase a greater amount of power from renewable energy sources.[41] The GCA established a pilot program that requires utility companies to solicit and enter long-term contracts for the purchase of newly generated renewable energy.[42] The GCA also promotes net metering, which allows on-site renewable energy generators to sell energy back to the grid.[43] The GCA also allows municipalities to own renewable energy facilities by providing the authority to issue bonds or notes for financing.[44] Finally, the GCA created the Green Communities Program that annually provides up to $10 million to municipalities for the purpose of promoting energy efficiency, siting, and construction of renewable energy facilities.[45]

C. Permitting and Siting of Wind Energy Facilities

As the rate of wind energy development increases, greater attention is paid to the role of the permitting and siting process.[46] Differing requirements across states and localities mean there is not a "one-size-fits-all" approach to wind

40. *See* TRC ENV. CORP., *supra* note 9, at 1-1 (describing goal of GCA provisions).

41. *See* Green Communities Act § 32 (increasing purchases of renewable energy sources to fifteen percent by 2020). This provision also creates a second-tier RPS to provide support for the continued operation of older renewable energy facilities. *See id.* Moreover, section 32 establishes minimum electric supplier purchase requirements from small-scale, on-site renewable energy generation and expressly includes behind-the-meter renewable energy generation. *See id.*

42. *See* Green Communities Act § 83 (providing financial assurance for renewable energy development). Under this section, a contract with a term of ten to fifteen years is considered to be long-term. *See id.*

43. *See* Green Communities Act § 139 (allowing distribution company customer using renewable electricity generated on-site to net-meter). Wind and solar facilities up to two megawatts qualify for net-metering, which allows such facilities to sell unused power back into the grid at a fair market price. *See id.*; *infra* Section II.D.4 (discussing solar net-metering in Massachusetts).

44. *See* Green Communities Act § 143 (establishing guidelines for small municipal renewable energy generating facilities).

45. *See* Green Communities Act § 22 (establishing Division of Green Communities and Green Communities Program). The Program aims to "reduce energy consumption and costs, reduce pollution, facilitate the development of renewable and alternative energy resources, and create local jobs related to the building of renewable and alternative energy facilities and the installation of energy-efficient equipment." *Id.* To qualify as a green community, a municipality must adopt as-of-right siting for renewable energy generation facilities and an expedited permitting process for approving such facilities within one year of the filing of an application. *See id.*

46. *See* TETRA TECH EC, INC. ET AL., AM. WIND ENERGY ASS'N, WIND ENERGY SITING HANDBOOK 1-1 (Feb. 2008), http://awea.files.cms-plus.com/AWEA_Siting_Handbook_Feb2008.pdf, *archived at* http://perma.cc/P483-G76Q [hereinafter WIND ENERGY SITING HANDBOOK] (presenting general information about regulatory and environmental issues associated with wind energy projects); *see also* SKY STANFIELD ET AL., INTERSTATE RENEWABLE ENERGY COUNCIL, INC., SHARING SUCCESS: EMERGING APPROACHES TO EFFICIENT ROOFTOP SOLAR PERMITTING 1 (May 2012) https://energycenter.org/sites/default/files/docs/nav/policy/research-and-reports/IREC%20PV%20Permitting.pdf, *archived at* https://perma.cc/KB8H-MHPW (observing importance of permitting process at both levels of government). "As the nation moves toward achieving the renewable energy goals set out by state and local governments, increasing attention is being paid to the role [of] the permitting process." STANFIELD ET AL., *supra*.

permitting and siting.[47] Effective wind energy facility siting, however, will continue the industry's growth as well as the related corresponding economic and environmental benefits.[48]

1. The Permitting and Siting Process in New England

A review of regulations and permitting processes of states within a region is beneficial when analyzing a particular state's processes.[49] A recent study demonstrates that a number of states near Massachusetts have more complete and predictable review processes, including: consolidated and comprehensive project review; "one-stop" permitting; guidelines for the sometimes burdensome required technical studies; limits on permissible time periods for review; and limiting the appeals process.[50] Analyzing the practices of neighboring states provides common themes and key points that can be instructional to Massachusetts.[51] Many states have centralized siting boards, which conduct "one-stop" consolidated permitting processes; additionally, a number of states have an electric generation capacity threshold significantly lower than Massachusetts.[52]

47. *See* WIND ENERGY SITING HANDBOOK, *supra* note 46 (presenting general information about regulatory and environmental issues associated with wind energy projects).

48. *See* John Anderson, *Siting Wind Farms Requires Choosing a Proper Location*, AM. WIND ENERGY ASS'N (2013), http://www.awea.org/Issues/Content.aspx?ItemNumber=853&navItemNumber=671, *archived at* http://perma.cc/P8NG-XJYF (discussing siting as vital part of wind power development and operations).

49. *See* RICHARD D'AMATO ET AL., NELSON A. ROCKEFELLER CENTER, POLICY OPTIONS FOR SITING ENERGY FACILITIES: A CROSS-STATE ANALYSIS OF ENERGY FACILITY SITING BOARD STRATEGIES 1 (June 2013), http://rockefeller.dartmouth.edu/shop/prs_siting_energy_facilities_final_070113.pdf, *archived at* http://perma.cc/SN7L-E6BU (surveying surrounding states provides diverse array of strategies). A review of the region is important, especially considering the variable nature of the renewable resource may be similar in a certain region but quite different in other parts of the country. *See id.* Furthermore, the surrounding states represent Massachusetts's closest economic competitors. *See* TRC ENV. CORP., *supra* note 9, at ES-2.

50. *See* TRC ENV. CORP., *supra* note 9, at ES-2 (providing overview of study's findings). The study looked at the state regulatory programs for siting onshore wind projects in Massachusetts, Connecticut, Maine, New Hampshire, Rhode Island, Vermont, New York, Pennsylvania, and West Virginia. *See id.* at 5-1. The study compared actions of other states to improve or expedite the review process for wind projects. *See id.*

51. *See id.* Neighboring states are split on the issue of one-stop permitting. *See id.* States that use one-stop permitting generally face problems with the level of involvement of the other state agencies and local boards. *See id.* at 5-14 to 5-15. On the other hand, states that do not permit one-stop permitting generally face problems regarding the level of coordination with other agencies. *See id*. Other issues include: the degree of federal and state agency coordination; whether there is a special standard of review for renewables; whether there are designated areas for renewable development; standards or guidelines, such as minimum and maximum restrictions or model ordinances; how hearings and appeals are conducted; the specified time periods for decision making; and public involvement in the process. *See id.* at 5-14 to 5-16.

52. *See* TRC ENV. CORP., *supra* note 9, at 5-1 (observing threshold range among Northeastern states). Vermont has a one-stop process for projects of all size; Connecticut has a one megawatt threshold; New Hampshire's threshold is thirty megawatts, but projects as small as five megawatts can request siting board review; and Maine has a twenty acre threshold that roughly equates between one to five megawatts. *See id.*; D'AMATO ET AL., *supra* note 49, at 2-9 (providing state-by-state analysis); ENERGY GENERATION SITING POLICY COMM'N, SITING ELECTRIC GENERATION IN VERMONT ANALYSIS AND RECOMMENDATIONS: A REPORT TO THE GOVERNOR AND THE VERMONT GENERAL ASSEMBLY 28-33 (Apr. 2013), http://sitingcommission.

One of the goals of a centralized siting review board and consolidated permitting process is to streamline the permitting process.[53] To make the process even more efficient, many northeastern states allow a single appeal from the centralized permitting board to the state's highest court.[54] A number of northeastern states also make the process more transparent with defined timelines for the completion of project review.[55]

2. The Energy Facilities Siting Board and the Permitting Process in Massachusetts

The Energy Facilities Siting Board (EFSB) licenses the construction of all major energy infrastructures in Massachusetts.[56] The EFSB is within, but independent of, the Commonwealth's Department of Public Utilities (DPU) and has jurisdiction over facilities with electric-generating capacity of 100 megawatts or more.[57] After review, the EFSB may grant a certificate of environmental impact and public interest, which has the legal effect of all otherwise required state or local permits, approvals, and authorizations.[58]

Massachusetts has a comprehensive review process for renewable energy generation greater than 100 megawatts, under which qualifying facilities benefit from a consolidated permit review before the EFSB.[59] In these instances, the EFSB process includes a petition for approval for construction and a certificate of environmental impact and public interest, which consolidates or eliminates other state and local permitting processes.[60] This

vermont.gov/sites/cep/files/Siting_Commission/Publications/FinalReport/Final%20Report%20-%20Energy%20Generation%20Siting%20Policy%20Commission%2004-30-13.pdf, *archived at* http://perma .cc/N8HX-ELZA (reviewing and comparing practices in other New England states); TOM STANTON, NAT'L REGULATORY RESEARCH INST., PUT IT THERE! –WIND ENERGY & WIND-PARK SITING AND ZONING BEST PRACTICES AND GUIDANCE FOR STATES 28-33, app. A (Jan. 2012), http://www.naruc.org/Publications/FIN AL%20FINAL%20 NRRI_Wind_Siting_Jan12-03.pdf, *archived at* http://perma.cc/45AW-7ZRB (providing results from state survey reports).

53. *See* TRC ENV. CORP., *supra* note 9, at 5-1 (listing states found to have centralized siting boards with "one-stop" project review).

54. *See id.* (observing threshold range among northeastern states). In Massachusetts, this timesaving measure only applies to projects meeting the 100 megawatts threshold requirement. *See id.* The states that may currently send appeals directly to the state's highest court are: Connecticut, Massachusetts, Rhode Island, and Vermont. *See id.*; D'AMATO ET AL., *supra* note 49, at 2-9 (providing state-by-state analysis); ENERGY GENERATION SITING POLICY COMM'N, *supra* note 52, at 28-33 (comparing practices in other New England states); STANTON, *supra* note 52, at 28-33, A-1 to A-109 (providing results from state survey reports).

55. *See* TRC ENV. CORP., *supra* note 9, at 5-1 (observing various timelines for project review among northeastern states). For example, Connecticut's process takes six months, and Vermont has no statutory limit for its reviewing agency to decide on an application. *See id.* at 5-2 to 5-13; D'AMATO ET AL., *supra* note 49, at 2-11 (surveying New England states).

56. *See* MASS. GEN. LAWS ch. 164, § 69H (2013) (establishing energy facilities siting board).

57. *See id.* §§ 69G, 69J, 69J1/4 (setting forth EFSB jurisdiction).

58. *See id.* § 69K (explaining circumstances and advantages of certificate issuance).

59. *See* BERNSTEIN ET AL., *supra* note 11 (noting EFSB reviews large-scale energy facility projects of at least 100 megawatts).

60. *See* TRC ENV. CORP., *supra* note 9, at 5-2; MASS. ENERGY FACILITIES SITING BD., THE ENERGY

consolidated review is available to all traditional and alternative forms of electrical generation, but because this review only applies to the largest projects, most projects are reviewed and permitted separately at the state and local levels.[61] Local review requires obtaining a building permit and may require a variance or special permit from the local zoning board.[62]

3. Massachusetts Wind Energy Model Zoning Bylaw

To improve municipalities' zoning standards for wind power development and renewable energy projects, the Department of Energy Resources (DOER) and the Executive Office of Energy and Environmental Affairs (EEA) developed model bylaws.[63] The Conditional Use Wind Model Zoning Bylaw applies to utility-scale wind facilities, on-site wind facilities, and small wind energy systems.[64] The agencies also provide an As-of-Right Wind Model Zoning Bylaw for municipalities seeking to become a Green Community under the GCA.[65] To date, thirty-five Massachusetts communities adopted wind bylaws, four of which have done so as-of-right.[66]

4. Wind Siting Reform in Massachusetts

In 2009, former Governor Patrick announced a goal of installing 2,000

FACILITIES SITING HANDBOOK: AN OVERVIEW OF THE ENERGY FACILITIES SITING BD. REVIEW PROCESS 3-4 (July 2011), http://www.mass.gov/eea/docs/dpu/siting/handbook.pdf, *archived at* http://perma.cc/K2P2-SEQE (explaining sitting board process).

61. *See* BERNSTEIN ET AL., *supra* note 11, at 44 (noting EFSB reviews large-scale energy facility projects of at least 100 megawatts).

62. *See id.* (discussing consolidated review process). Some towns adopted bylaws based on model ordinances, and towns may require a wetlands order from the conservation commission or a local historic district review. *See id.*

63. *See* Exec. Office of Energy & Envtl. Affairs, *Wind Energy Model Zoning By-Law*, MASS.GOV (2015), http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/wind/wind-energy-model-zoning-by-law.html, *archived at* http://perma.cc/DS7D-Y5BN (providing overview of model bylaws).

64. *See id.* (listing cities and towns with wind bylaws); *see also* MASS. DEP'T ENERGY RESOURCES & EXEC. OFFICE OF ENVTL. AFFAIRS, MODEL AMENDMENT TO A ZONING ORDINANCE OR BY-LAW: ALLOWING CONDITIONAL USE OF WIND ENERGY FACILITIES § 1.0 (June 2011), http://www.mass.gov/eea/docs/doer/gca/wind-not-by-right-bylaw-june13-2011.pdf, *archived at* http://perma.cc/PW84-BTMZ (establishing reasonable standards for wind power development intended for adoption by municipalities).

65. *See* MASS. DEPT. ENERGY RES. & EXEC. OFFICE OF ENVTL. AFFAIRS, MODEL AS-OF-RIGHT ZONING ORDINANCE OR BYLAW: ALLOWING USE OF WIND ENERGY FACILITIES §3.0 (June 2011), http://www.mass.gov/eea/docs/doer/gca/as-of-right-wind-bylaw-june-2011.pdf, *archived at* http://perma.cc/3Z2V-MJ2P (establishing reasonable standards for wind power development by right for municipalities).

66. *See Wind Energy Model Zoning By-Law*, *supra* note 63 (listing cities and towns in Massachusetts with wind bylaws). The University of Massachusetts Wind Energy Center conducted a site identification and screening of state-owned land for potential wind power in 2009. *See* Exec. Office of Energy and Envtl. Affairs, *Massachusetts Potential Wind Power Sites on State-owned Land Index*, MASS.GOV, http://www.mass.gov/eea/docs/doer/renewables/wind/index-state.pdf (last visited Sept. 3, 2015), *archived at* https://perma.cc/9FNB-9FHF (indexing potential wind power sites on state-owned land). The index found 947 megawatts of potential wind power in forty-four locations, primarily in Berkshire and Barnstable Counties. *See id.*

megawatts of wind capacity by 2020.[67] Massachusetts experienced one of the fastest wind energy growth rates in the nation, growing from just three megawatts and three turbines installed in 2007 to more than 100 megawatts and dozens of turbines currently installed throughout the Commonwealth.[68] Given that siting often impedes renewable energy development, the GCA created an advisory commission to investigate many aspects of energy facility siting.[69] One aspect of the advisory commission's charge was to determine "whether current laws and regulations do not adequately facilitate the siting of renewable and alternative energy facilities, or whether they make it more difficult to site renewable energy facilities than fossil-fueled energy facilities, and . . . to make recommendations for changes to such laws and regulations."[70] The Commission's report found that wind energy developers are looking for a permitting process with clear specification requirements, stated time limits, and a well-defined path that, if followed, will lead to the necessary approvals for development.[71] The Commission ultimately determined that providing clear and predictable siting standards would help achieve the Commonwealth's renewable energy goals.[72]

Over the past several years, Massachusetts state legislators attempted to pass comprehensive wind siting reform legislation.[73] In 2014, House Bill 2980 aspired to establish independent local and state permit processes to both adequately address local concerns and further promote wind energy

67. *See* Catherine Williams & Matt Kakley, *Patrick Administration Launches Community Wind Energy Initiative*, MASS. CLEAN ENERGY CTR. (June 27, 2013), http://www.masscec.com/news/patrick-administration-launches-community-wind-energy-initiative, *archived at* http://perma.cc/A6R3-HBNR (announcing inter-agency initiative to provide support and guidance for land-based wind projects). Wind power could help Massachusetts meet an estimated ten percent of its electricity needs because installing wind capacity of two megawatts would provide enough electricity for 800,000 homes. *See id.*; DEPT. OF PUB. UTILS., INVESTIGATION BY THE DEPARTMENT OF PUBLIC UTILITIES ON ITS OWN MOTION INTO BEST PRACTICES FOR THE SITING OF LAND-BASED WIND ENERGY FACILITIES, D.P.U. 13-165, at 2 (2013) [hereinafter D.P.U. 13-165] (referencing Governor Patrick's goal for land-based wind capacity).

68. *See* Williams & Kakley, *supra* note 67 (describing Commonwealth's growing wind energy use pursuant to Patrick administration initiative).

69. *See* D.P.U. 13-165, *supra* note 67, at 3 (describing advisory commission established in GCA).

70. Green Communities Act § 89 (establishing energy facilities siting commission and specifying areas of commission's study).

71. *See* TRC ENV. CORP., *supra* note 9, at 6-1 (detailing results of non-project specific interviews with wind developers).

72. *See id.* (suggesting such reform necessary based on study findings). The Commission noted several ways to achieve the Commonwealth's renewable energy goals, but good examples can be found by looking at neighboring states with similar environmental issues, active local stakeholder groups, and concerns of land owners. *See id.* The Commission noted that such examples of permitting processes and procedures have made other nearby states more attractive to wind power development than Massachusetts. *See id.*

73. *See* H.R. 1775, 187th Leg. (Mass. 2011) (demonstrating legislative attempt to reform wind siting); H.R. 4955, 186th Leg. (Mass. 2009) (attempting to reform wind siting). Although this bill passed the House, the Senate declined to take action on the bill, thus it did not become law. *See* H.R. 1775, 187th Leg. (Mass. 2011); H.R. 4955, 186th Leg. (Mass. 2009).

development.[74]

Wind energy facility siting reform may happen legislatively, but it also may occur through administrative action.[75] In 2013, the EEA announced its Community Wind Outreach Initiative, which subsequently established an inter-agency working group "charged with providing support and guidance for municipalities, developers, and other stakeholders in Massachusetts that may be hosting, reviewing, or considering land-based wind energy facilities."[76] The working group acknowledged that the siting, approval, and permitting process for land-based wind energy facilities is unwieldy, involving reviews at the local, state, regional, and federal levels.[77] In late 2013, the DPU issued a Notice of Investigation to solicit public input and develop wind-siting guidance to assist permitting authorities, developers, and the public in achieving better siting outcomes through more consistent use of best practices.[78]

D. Solar Energy Development

There are a number of different approaches that state and local governments may take when attempting to regulate or promote solar energy development.[79] These approaches may be categorized as *carrots* or *sticks*.[80] When governments decide to dangle rewards to entice certain behavior, it is categorized as carrots.[81] However, when governments threaten penalties for failing to achieve certain behavior, it is categorized as sticks.[82] Common examples of carrots for solar regulation are tax incentives or subsidies whereas sticks commonly occur upon failure to fulfill RPS requirements.[83]

74. *See* H.R. 2980, 188th Leg. (Mass. 2014) (reforming siting process for land based wind projects in Massachusetts). In the 2013-2014 Legislative session, the Bill did not advance beyond the Joint Committee on Telecommunications, Utilities, and Energy due to concerns over the bill's mandates. *See* Kyle Cheney, *Legislative Committee Buries Wind Siting Bill*, MV TIMES (Jan. 25, 2012), http://www.mvtimes.com /2012/01/25/legislative-committee-buries-wind-siting-bill-9307/, *archived at* http://perma.cc/PC7W-DK32 (reporting on Committee's refusal to advance Bill). The Committee's decision denied the Patrick administration a long-held priority in its effort to increase renewable energy production. *See id.* The Committee's decision not to report the Bill favorably is the third consecutive session where a version of comprehensive wind siting reform legislation failed to become law. *See* H.R. 1775, 187th Leg. (Mass. 2011) (demonstrating failed attempt to reform wind siting); H.R. 4955, 186th Leg. (Mass. 2009) (demonstrating failed attempt to reform wind siting).

75. *See* D.P.U. 13-165, *supra* note 67 (opening investigation into land-based wind energy facility siting best practices).

76. D.P.U. 13-165, *supra* note 67, at 1 (providing background on community wind working group).

77. *See id.* at 3 (suggesting current wind energy facility siting review practices as complex).

78. *See id.* at 1-3 (describing purpose of order opening investigation).

79. *See* Amy L. Stein, *Renewable Energy Through Agency Action*, 84 U. COLO. L. REV. 651, 654 (2013), *available at* http://scholarship.law.ufl.edu/facultypub/506 (describing range of alternative approaches governments may take).

80. *See id.*

81. *See id.*

82. *See id.*

83. *See* Stein, *supra* note 79, at 669-70 (explaining common examples of carrots and sticks).

1. Renewable Portfolio Standards in Massachusetts and New England

One example of the stick approach is for a state to establish RPS because it serves as a statutory obligation on energy suppliers to obtain a percentage of electricity from renewable energy sources.[84] The Massachusetts RPS began in 2003 with an obligation of one percent to increase annually at one-half percent through 2009.[85] The GCA's passage in 2008 expanded the RPS program, both imposed a one percent annual increase in the amount of renewable energy utilities must obtain and created two separate classes of qualifying generation units.[86] Solar photovoltaic (PV) and wind energy generation facilities that began commercial operation after 1997 are under RPS Class I, which currently has a requirement of five percent and is set to increase by one percent annually.[87]

Utility compliance with the RPS is necessary for this stick to be effective.[88]

84. *See* Jocelyn Durkay, *State Renewable Portfolio Standards and Goals*, NAT'L CONF. OF ST. LEGISLATURES (July 1, 2015), http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx, *archived at* http://perma.cc/EGP6-QQST [hereinafter *Renewable Portfolio Standards*] (describing renewable portfolio standards and goals). The requirement may apply only to investor-owned utilities (IOUs), while some states also include municipalities and electric cooperatives at equivalent or lower amounts. *See id.* RPS requirements will help achieve the goal of lowering electricity bills by diversifying the region's energy mix. *See* Caleb Kenna, *Renewables Are in New England's Future, but Gas Pipelines Still Needed*, BOS. GLOBE (Oct. 5, 2014), http://www.bostonglobe.com/opinion/editorials/2014/10/04/renewables-are-new-england-future-but-gas-pipelines-still-needed/1tpsRSYaMioGdeg8k9R2rM/story.html (linking diversification of energy resources to lower electricity bills over long term). More renewable energy—such as wind and solar—will cushion the region against the volatility of the natural gas market, while also reducing carbon emissions. *See id.* A mixture of renewable power production and traditional electricity generation feeding into the same grid, however, can lead to instances during which the amount of power provided to the system by renewable resources must be reduced. *See* Memorandum from Erica Wilkerson to New England Stakeholders (June 28, 2014), http://www.iso-ne.com/pubs/pubcomm/corr/2013/curtailment_summary_2013.pdf, *archived at* http://perma.cc/N95S-9NX5 [hereinafter Wilkerson] (discussing need to reduce amount of power wind resources provide to system). This situation generally arises when the maximum potential output of a wind power facility would exceed the capacity of the existing transmission system. *See id.*

85. *See* Exec. Office of Energy and Envtl. Affairs *RPS and APS Program Summaries: RPS Class I and II*, MASS.GOV (2015), http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/rps-aps/rps-and-aps-program-summaries.html, *archived at* http://perma.cc/47NQ-BA5K [hereinafter *Program Summaries*] (describing Massachusetts's RPS program).

86. *See id.* The GCA also created two distinct classes with different supplier compliance percentages and distinctive qualifying generation units that may be used to meet the compliance percentages. *See id.*

87. *See id.* (describing RPS Class I requirements); *see also* 225 MASS. CODE REGS. 14.00 (2014) (establishing Class I of REPS). In addition to solar PV and wind energy, RPS Class I also encompasses solar thermal electric, small hydropower, landfill methane and anaerobic digester gas, marine or hydrokinetic energy, geothermal energy, and eligible biomass fuel. *See id.* at 14.05(1)(a). RPS Class II mandates that a minimum percentage of electricity sales come from renewable energy and waste energy. *See Program Summaries*, *supra* note 85 (describing RPS Class II). The obligation for each component is approximately 3.5% and does not increase annually; a supplier must comply with both minimum percentage obligations. *See id.* The Class II renewable component features the same energy sources as the Class I component, but the facilities must have been in operation prior to 1998, providing financial incentives for continued operation of pre-1998 renewable energy generation facilities. *See* 225 MASS. CODE REGS. 15.05(1)(a) & (b) (2014) (setting forth eligibility criteria for RPS Class II generation units).

88. *See* Jay Fitzgerald, *Solar Use Will Push Energy Costs Up in Mass.*, BOS. GLOBE (Feb. 12, 2014),

In Massachusetts, renewable energy suppliers are required to document compliance with RPS in annual filings submitted to DOER.[89] Suppliers can meet their compliance obligations by purchasing Renewable Energy Certificates (RECs) from qualified generators or making annual compliance payments to the Massachusetts Clean Energy Center (MCEC).[90] One REC is generated for every megawatt of electricity generated by a qualified system.[91] To meet the RPS compliance obligations, suppliers not creating enough renewable energy to meet the required amount must purchase a number of RECs equal to the percentage for that particular compliance year.[92] The Solar REC cost in Massachusetts is the highest of any state, topping $250 per credit in 2014.[93]

Massachusetts is not the only state to take this stick approach to promoting renewable energy development by adopting an RPS.[94] In fact, twenty-eight other states and the District of Colombia have RPS variants, and another eight

http://www.bostonglobe.com/business/2014/02/12/mass-solar-rules-could-cost-billion-extra/7GUqAPbvuM88wS9cZchVCI/story.html (discussing effect of RPS on utilities in Massachusetts). Utility companies are concerned with how the state would require them to buy power, specifically whether they need to buy from a mix of large and small producers. *See id.* The utilities argue that such an approach would:

> . . . result in them paying much higher prices for solar power – much like buying groceries at a corner convenience store instead of a large supermarket. Instead, utilities want to be able to shop bids for solar power from a few larger producers, on the assumption they would be able to negotiate better prices based on higher volume.

Id. Moreover, with natural gas prices at an all-time low and projected to stay low for the foreseeable future, solar power remains up to two to three times the price of electricity produced by conventional sources such as natural gas and coal. *See id.* (noting higher price of solar power than natural gas); Matthew Philips, *Why Natural Gas Will Stay Cheap in 2013*, BLOOMBERG BUS. (Jan. 10, 2013), http://www.bloomberg.com/bw/articles/2013-01-10/why-natural-gas-will-stay-cheap-in-2013, *archived at* http://perma.cc/E52Q-R37A (noting low price of natural gas). "[T]he fundamental issue that's kept natural gas prices so low for the last few years—too much supply, inadequate demand—appears here to stay for the foreseeable future." *Id.*

89. *See Program Summaries*, *supra* note 85 (discussing compliance with RPS).

90. *See id.* (summarizing RPS and APS program). The revenue generated from Alternative Compliance Payments (ACP) is used to fund new renewable energy generation projects in Massachusetts. *See id.*

91. *See id.* (summarizing compliance with suppliers).

92. *See id.* In order to determine the prices for RECs, DOER sets an ACP rate, which serves as a ceiling price and exists as a penalty payment that suppliers must pay if they do not meet their RPS compliance obligation. *See id.*

93. *See Net Metering: Hearing on S. 2019 & H. 3901 Before the Joint Comm. on Telecomm., Utilities, and Energy*, 186th Leg., at 11 (Mass. 2014) (testimony of TransCanada executive Mike Hachey) [hereinafter *Net Metering: Hearing*] (evidencing high cost of energy in Massachusetts). The next highest state solar REC cost is New Jersey at just over $150 per credit. *See id.*

94. *See Find Policies & Incentives by State*, DATABASE OF ST. INCENTIVES FOR RENEWABLES & EFFICIENCY (2013), http://programs.dsireusa.org/system/program (type into the search box "renewable portfolio standards" to retrieve list of states that have also adopted renewable portfolio standards); *archived at* https://perma.cc/3XRG-EHDX?type=image [hereinafter DATABASE OF ST. INCENTIVES FOR RENEWABLES & EFFICIENCY] (providing list of states with renewable portfolio standards); *see also Renewable Portfolio Standards*, *supra* note 84 (listing states with renewable portfolio standards and goals).

states have voluntary targets.[95] All six New England states adopted an RPS.[96]

2. Installed Solar Capacity in Massachusetts

Former Governor Deval Patrick declared an aggressive goal for Massachusetts to achieve 1,600 MW of solar power installations by the year 2020.[97] Massachusetts already increased the amount of installed solar energy from 3.64 megawatts installed in 2008 to 841 megawatts installed as of May 2015.[98] Massachusetts is well on its way to achieving the new goal, already ranking among the top states in solar energy with more installed solar capacity than all but three states.[99] The main reason Massachusetts currently outranks sunnier states like Hawaii and Nevada is because of the Commonwealth's strong incentives for solar development.[100]

95. *See* Jocelyn Durkay, *Renewable Energy Mandates on Front Burner*, NAT'L CONF. OF ST. LEGISLATURES (Jan. 1, 2014), http://www.ncsl.org/bookstore/state-legislatures-magazine/trends-and-transitions-january-2014.aspx#4, *archived at* http://perma.cc/96AN-G2GJ [hereinafter *Renewable Energy Mandates*] (discussing states with RPS and states with pending legislation relative to adoption of RPS).

96. *See Renewable Portfolio Standards*, *supra* note 84 (discussing RPS in New England).

97. *See* Exec. Office of Energy and Envtl. Affairs, *Solar*, MASS.GOV (2015), http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/, *archived at* http://perma.cc/S32F-CUT9 (declaring new goal after reaching initial 250 megawatt goal four years early).

98. *See* Mass. Dept. of Energy Resources, *Installed Solar Capacity in Massachusetts*, MASS.GOV http://www.mass.gov/eea/docs/doer/renewables/installed-solar.pdf (last visited Sept.1, 2015), *archived at* http://perma.cc/Q7WD-QDWY (diagramming Massachusetts's cumulative amount of solar power); *see also* Eric Runge, *New Regulations Offer Sunny Outlook for Solar Industry*, BOS. BUS. J. (Jan. 10, 2014), http://www.bizjournals.com/boston/print-edition/2014/01/10/new-regulations-offer-sunny-outloook.html, *archived at* http://perma.cc/8V5X-TSZN (reporting installed solar capacity in Massachusetts as of January 1, 2014). The 425 megawatts installed capacity is up from 361 megawatts installed as of December 1, 2013. *See* MARK SYLVIA, MASS. DEP'T OF ENERGY RESOURCES, MASSACHUSETTS SOLAR MARKET: RPS SOLAR CARVE-OUT II FINAL POLICY DESIGN 2 (Dec. 13, 2013), http://www.mass.gov/eea/docs/doer/rps-aps/doer-srec-ii-final-design-restructuring-roundtable-sylvia-121313.pdf, *archived at* https://perma.cc/VR7A-UCZC (diagramming cumulative installed solar capacity in Massachusetts).

99. *See* Jon Chesto, *Bay State Rises to Fourth Place in Latest Ranking of Solar Installations*, BOS. BUS. J. (Dec. 10, 2013), http://www.bizjournals.com/boston/blog/mass_roundup/2013/12/mass-ranks-fourth-in-solar-capacity.html, *archived at* http://perma.cc/ST6K-GRGV (reporting release of rankings of installed capacity by Solar Energy Industries Association (SEIA)). The only states ahead of Massachusetts on SEIA's ranking of installed solar capacity were California, Arizona, and North Carolina. *See id.*; *see also* Exec. Office of Energy and Envtl. Affairs, *SREC-II Solar Carve Out Policy Development*, MASS.GOV (2015), http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/rps-solar-carve-out/post-400-mw-solar-policy-development.html, *archived at* https://perma.cc/6G27-FFFV (detailing DOER's development of SREC-II Solar Carve-Out Policy). In anticipation of reaching the 400 MW cap set forth in the first RPS solar carve-out program, DOER engaged in developing the SREC-II program in order to maintain the growth of the solar PV market in Massachusetts. *See SREC-II Solar Carve Out Policy Development*, *supra*. The final regulations for the new SREC-II program will likely be promulgated by early to mid-2014. *See* Eric K. Runge, *SREC-II Begins the Next Chapter of Solar in Massachusetts*, DAY PITNEY LLP (Jan. 6, 2014), http://www.daypitney.com/news/newsDetail.aspx?pkid=5067, *archived at* http://perma.cc/5DX2-32BM (discussing anticipated timeline for promulgation of final SREC-II regulations).

100. *See* Runge, *supra* note 99 (discussing Massachusetts's top ranking among states for solar capacity); *see also* SHAYLE KANN ET AL., U.S. SOLAR MARKET INSIGHT REPORT: Q3 EXEC. SUMMARY 7 (2013), http://www.seia.org/sites/default/files/oxD2AN83502013q3smies.pdf?key=59237104, *archived at* http://perma.cc/6YCR-X34Q (displaying table of U.S. PV state rankings for Q3 2013). SEIA reports on non-residential

3. Net Metering in Massachusetts

Net metering allows compensation for customers with distributed generation systems—predominantly solar—when their systems generate more electricity than the customer is using onsite.[101] Every New England state provides some form of carrot for solar energy development in both net metering standards and rebate programs.[102] The Massachusetts Legislature capped the use of net metering at three percent of an electric utility's power usage, with parallel limits for public sector solar and privately owned projects.[103] Recently filed legislation would lift the net metering cap completely through the end of 2016.[104] This has sparked a debate among the solar and electric utility industry as to whether net metering should remain capped.[105] The utilities argue net metering shifts more of the costs of running the system onto the rest of the ratepayers, while proponents of time-capped net metering seek a long-term approach and a general clarity to the system overall.[106]

solar energy growth in Massachusetts and projects continued expansion throughout 2014. *See* KANN ET AL., *supra* at 5. The report also points out 2013 was a "good year for the solar market from a legislative and regulatory perspective," with the industry achieving "broadly favorable outcomes," including the new solar deployment program in Massachusetts. *See id.*

101. *See Net Metering*, MASS. DEPT. OF ENERGY RESOURCES, https://sites.google.com/site/massdgic/home/net-metering (last visited Sept. 3, 2015), *archived at* https://perma.cc/R2GN-ZZRW (explaining net metering). At the end of each month, on-site generation is credited against any electricity that the customer consumed from the grid; any net excess generation results in a credit for his or her utility bill. *See id.*

102. *See* DATABASE OF ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, *supra* note 94 (providing map of net metering capacity limits for all fifty states); *Programs*, DATABASE OF ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, http://programs.dsireusa.org/system/program?type=88& (last visited Sept. 5, 2015), *archived at* http://perma.cc/EK4E-LWYP (providing table of state and utility, local, or non-profit rebate programs).

103. *See* Jon Chesto, *Bill To Reshape the State's Solar Subsidies Sparks Criticism*, BOS. BUS. J. (June 18, 2014), http://www.bizjournals.com/boston/blog/mass_roundup/2014/06/bill-to-reshape-the-states-solar-subsidies-sparks.html, *archived at* http://perma.cc/YX7Z-B8UE (providing background on net metering program).

104. *See* H.R. 3901, 188th Leg. (Mass. 2014) (removing net metering cap allocation for any on-site renewable energy source); *see also Concerning Net Metering on H. 3901 & S. 2019 Before the Joint Comm. on Telecomm., Utilities, and Energy*, 188th Leg. (Mass. 2014) (statement of Fred Zalcman, Managing Director of Government Affairs, SunEdison, LLC) [hereinafter *Concerning Net Metering*] (testifying in support of H. 3901 and S. 2019). The legislation "is a modest and balanced measure aimed at maintaining the momentum for solar development in the Commonwealth in the short-term, while also calling for the establishment of a more permanent and long-term solution through a deliberative stakeholder process." *Concerning Net Metering*, *supra* (testifying in support of H. 3901 and S. 2019).

105. *See Concerning Net Metering*, *supra* note 104 (demonstrating debate among solar and electric utility industry); *see also* S. 2030, 188th Leg. (Mass. 2014) (rearranging net metering system in number of ways). Under S. 2030, solar projects greater than 500 kilowatts would only be built by winning a competitive bid through the utilities. *See* Chesto, *supra* note 103 (discussing S. 2030). Moreover, private developers of any-sized project would no longer be able to use net metering for off-site power plants and new restrictions on municipal projects would be established. *See id.* Finally, new distribution charges would be imposed on net-metered customers. *See id.*

106. *See* Chesto, *supra* note 103 (outlining stakeholders' positions); *see also Public Hearing—Senate Bill 2019/House Bill 3901: Hearing on S. 2019 & H. 3901 Before the Joint Comm. on Telecomm., Utilities and Energy*, 188th Leg. (Mass. 2014) (statement of Charles T. Blanchard, Town Manager, Town of Palmer) [hereinafter Statement of Blanchard] (testifying in support of legislation lifting net metering cap).

4. Solar Programs and Incentives in Massachusetts

The GCA strengthened the Massachusetts RPS by establishing a Solar Carve-Out Program to carve out a portion of the Class I Renewable Energy requirement to support distributed solar PV energy facilities.[107] Solarize Mass, another program that seeks to increase the adoption of small-scale solar electricity in participating communities, provides increased savings as more homes and businesses join the program.[108] This program is the result of a partnership between the Green Communities Division of DOER, established through the GCA and the MCEC, a quasi-public agency.[109] In three years, over 900 residents and business owners took advantage of this program, with fifteen more communities set to participate in the most recent round.[110]

Another program, Commonwealth Solar II, provides rebates for Massachusetts homeowners and businesses that install solar PV.[111] Massachusetts is also utilizing federal programs, such as the U.S. Department of Energy (DOE) SunShot Initiative Rooftop Solar Challenge, which provides grants to lower the soft costs associated with solar PV installation.[112] As part of the $566,354 federal grant, Massachusetts developed "model permitting processes and structure review guidance" for the implementation of community shared solar, conducted outreach to community financial institutions, and developed model solar zoning bylaw language.[113]

107. *See* Exec. Office of Energy and Envtl. Affairs, *Solar Carve-Out/SREC I*, MASS.GOV (2015), http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/rps-solar-carve-out/, *archived at* http://perma.cc/RTZ9-WQAG (providing overview of Solar Carve-Out program). This market-based incentive supports residential, commercial, public, and non-profit entities in developing 400 megawatts of solar PV across the Commonwealth. *See id.* As the current cap of 400 megawatts will soon be reached, the administration is fast-tracking revisions to expand the program. *See Patrick-Murray Administration Reaches 2017 Solar Energy Target, Sets New Goal*, MASS. CLEAN ENERGY CTR. (May 1, 2013), http://archives.lib.state.ma.us/bitstream/handle/2452/218724/ocn898221737-2013-05-01.pdf?sequence=1&isAllowed=y, *archived at* http://perma.cc/22LX-6FB9 [hereinafter *Patrick-Murray Admin.*] (announcing new goal of 1,600 megawatts of installed solar energy by 2020); *see also* Anna Noucas, *Massachusetts Finalizes SREC-II Program: Here's What You Can Expect*, SOLSYSTEMS (Apr. 14, 2014), http://www.solsystems.com/blog/2014/04/14/massachusetts-finalizes-srec-ii-program-heres-what-you-can-expect/, *archived at* http://perma.cc/BQ7A-N5GU (discussing new SREC-II program). SREC-II is essentially an extension of the original SREC program, albeit with some minor differences, such as different pricing expectations and lower Alternative Compliance Payment values. *See* Noucas, *supra*.

108. *See Solarize Mass*, MASS. CLEAN ENERGY CTR., http://www.masscec.com/solarizemass (last visited Sept. 26, 2015), *archived at* http://perma.cc/7GKZ-8RWD (providing overview of Solarize Mass program).

109. *See id.* (explaining development of Solarize Mass).

110. *See id.* (noting Solarize Mass program aspires to increase adoption of small solar electricity systems).

111. *See Commonwealth Solar II*, MASS. CLEAN ENERGY CTR., http://www.masscec.com/programs/commonwealth-solar-ii (last visited Sept. 4, 2015), *archived at* http://perma.cc/G5R7-A6NW (providing overview of Commonwealth Solar II program).

112. *See* Exec. Office of Energy and Envtl. Affairs, *SunShot Initiative Rooftop Solar Challenge (RSC)*, MASS.GOV, http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/sunshot-rooftop-solar-challenge.html (last visited Sept. 4, 2015), *archived at* http://perma.cc/DY56-4ATM (providing overview of SunShot Rooftop Solar Challenge program).

113. *See id.*; Exec. Office of Energy and Envtl. Affairs, *Massachusetts Awarded $566,354 To Advance*

E. Constitutional Challenges to State Renewable Energy Policies

Over the past several years, state policies promoting renewable energy are confronted with an increasing rate of constitutional challenges.[114] Since 2010, constitutional challenges to renewable energy laws or administrative decisions were brought in eleven states.[115] "Many of these lawsuits posit that requiring renewable energy to be generated within a State or transmitted to customers in the State, or providing incentives to do so, is unconstitutional under the dormant Commerce Clause because it inhibits out-of-state generators from competing on a level playing field."[116] Although ongoing proceedings remain in seven out of eleven states with challenges to renewable energy laws or administrative decisions, "no proceeding has yet resulted in a court or administrative agency striking down a renewable energy law as unconstitutional."[117]

The only challenge to a Massachusetts policy came in 2010 when TransCanada, a retail electricity supplier in Massachusetts, challenged two policies established under the GCA: the requirement that electric distribution companies solicit proposals for and enter into long-term contracts with renewable energy generators located in Massachusetts; and the solar carve-out to the Commonwealth's RPS.[118] TransCanada argued the in-state requirements violated the Commerce Clause by discriminating against out-of-state energy producers.[119] According to the complaint, the in-state requirement for new renewable generation prohibited TransCanada from satisfying the long-term contract requirement through a contract with an out-of-state wind power

Solar Energy Adoption in Five Communities, MASS.GOV (Dec. 9, 2011), http://archives.lib.state.ma.us/bitstream/handle/2452/218508/ocn898221737-2011-12-09.pdf?sequence=1&isAllowed=y, *archived at* http://perma.cc/LX3Z-Z2XF (announcing federal grant to improve finance options and permitting processes for solar energy projects).

114. *See* Ari Peskoe, *How Far Can States Go in Supporting Renewable Energy?*, THE ENERGY COLLECTIVE (Apr. 22, 2014), http://theenergycollective.com/ari-peskoe/371011/how-far-can-states-go-supporting-renewable-energy, *archived at* http://perma.cc/TL9R-F6QN (discussing recent constitutional challenges to state policies).

115. *See State Power Project*, HARV. L. SCH. ENVTL. L. PROGRAM, http://statepowerproject.org/states/ (last visited Oct. 25, 2014), *archived at* http://perma.cc/3RH9-A694 (summarizing proceedings related to constitutional challenges to state renewable energy laws).

116. Peskoe, *supra* note 114 (discussing legal arguments asserted against adoption of renewable energy laws in various states). Energy flows on a grid of transmission lines that crosses state borders. *See id.* "Energy injected into the grid from a plant in one State could be consumed in another State, so long as they are electrically connected. In general, at the point of consumption it is not possible to determine where the energy originated or what fuel was used." *Id.* Another issue found in these lawsuits is whether state energy policies violate the Supremacy Clause by intruding on exclusive Federal authority over wholesale electricity markets. *See id.*

117. *State Power Project*, *supra* note 115 (summarizing state proceedings).

118. *See* Complaint at 3-5, TransCanada Power Mktg. Ltd. v. Bowles, No. 10CV40070 (D. Mass. Apr. 16, 2010), 2010 WL 4599490 (demonstrating constitutional challenge under Commerce Clause).

119. *See id.* (challenging both in-state requirements as unconstitutional under Commerce Clause).

generation facility.[120] Furthermore, the complaint alleged the in-state preference under the solar carve-out restricted supply, which would raise the cost of complying with the statute.[121]

The case did not proceed to trial as TransCanada and Massachusetts reached a settlement just three months after the complaint was filed.[122] Pursuant to the agreement, Massachusetts agreed to drop the in-state requirement for long-term contracts and *grandfather in* existing solar contracts for purposes of complying with the solar carve-out to the RPS.[123] While the quick settlement in TransCanada's favor may indicate Massachusetts's regulators were "anxious . . . to make this case go away," it does not provide a legal determination as to how far a state can go in promoting in-state renewable energy projects without violating the Constitution's Dormant Commerce Clause.[124]

III. ANALYSIS

A. The Economic Success of the GCA: Does it Matter?

Public policy, such as the GCA, not only has environmental and societal benefits, but also benefits the Massachusetts economy.[125] There is disagreement on exactly what effect the GCA has on the Massachusetts economy with a broad range of projections.[126] Recently, United States Secretary of State John Kerry cited Massachusetts as an example when making the argument that there is no need to "choose between combating global

120. *See id.* at 11-17 (arguing in-state requirement serves no legitimate rationale and caused TransCanada substantial harm). TransCanada argued the in-state requirement prevented it from fulfilling the long-term contract requirement by contracting with a corporate affiliate's wind power project in Maine. *See id.*

121. *See id.* at 18-19 (arguing in-state requirement of solar carve-out discriminatory and harmful to public). TransCanada alleged that the in-state requirement would increase in-state demand and drive up prices for both retail electricity suppliers and consumers. *See id.*

122. *See* Partial Settlement Agreement, TransCanada Power Mktg. Ltd. v. Bowles, No. 10CV40070 (D. Mass. 2010), http://www.mass.gov/eea/docs/doer/renewables/solar/settlement-agreement.pdf, *archived at* http://perma.cc/R2KF-ANU8 (describing partial settlement agreement between TransCanada and Massachusetts).

123. *See id.* at 2. In Section 7 of the settlement, DOER issued emergency regulations to eliminate the in-state requirement that electric utilities buy their renewable energy from projects in Massachusetts. *See id.* (announcing emergency regulations). Section 8 of the settlement grandfathers in out-of-state solar projects installed prior to 2010 for the purposes of satisfying the solar carve-out program. *See id.* The grandfather clause provides an exception to the in-state requirements of the new regulation in order to be fair to electric utilities that bought renewable energy from out-of-state solar projects prior to the regulation. *See id.*

124. *See TransCanada Renewable Lawsuit Scores a Win in MA*, CLIMATE LAW. BLOG (June 11, 2010), http://www.climatelawyers.com/post/2010/06/11/TransCanada-renewable-lawsuit-scores-a-win-in-MA.aspx, *archived at* http://perma.cc/V5M2-3NTS (discussing implications of TransCanada case settlement).

125. *See Patrick-Murray Admin.*, *supra* note 107 (noting economic benefits to investing in home-grown renewable energy programs). "Massachusetts sits at the end of the energy pipeline, spending billions of dollars annually to import all of its fossil fuel based energy sources" coming from around the globe, which is a lost economic opportunity for Massachusetts. *Id.*

126. *Compare* HIBBARD ET AL., *supra* note 39 (providing first detailed look at economic impact of GCA), *with* Kerry & Hammond, *supra* note 9 (discussing growing clean tech sector in Massachusetts).

climate change or growing [the] econom[y] . . . . [W]e can do both–by improving resource productivity, investing in infrastructure, and stimulating innovation."[127] According to Secretary Kerry, "[f]or the third year in a row, Massachusetts has seen job growth in its clean energy sector hit double digits, most recently by 10.5 percent. It has grown 47 percent over the past four years . . . . Clean tech . . . [is] a $10 billion sector in the state's economy—and growing."[128] A 2014 report on the economic impact of the GCA, however, projected that the law will produce a relatively modest $1.2 billion in net economic benefits to Massachusetts in the next fifteen years.[129] Although the report acknowledged that the projected economic benefits are relatively small, the study shows that the GCA is not a drag on the state's economy and has even helped it a bit.[130] Although the reported 16,000 jobs created by the law have virtually no impact on the broader economy, "the potential pluses of a cleaner environment and resulting health improvements are probably incalculable."[131]

Critics of government incentives for renewable energy development argue it is the economic impacts—not the associated environmental benefits—that will determine whether policy makers should continue to facilitate development and investment in green industries, such as wind and solar.[132] This criticism stems from the argument that renewables tend to increase costs for consumers and ultimately do little to improve the environment.[133] This argument is reinforced at a time when natural gas prices are at an all-time low and are expected to remain low for the foreseeable future.[134] Critics also argue that a free market

127. Kerry & Hammond, *supra* note 9 (discussing responsibility of combating climate change and corresponding economic opportunity).

128. *Id.* (addressing clean tech industry in Massachusetts). The clean energy sector in Massachusetts now "comprise[s] over 5,800 firms employing nearly 89,000 people." *Id.*

129. *See* HIBBARD ET AL., *supra* note 39, at 38 (providing detailed economic projections of impact of GCA); Fitzgerald, *supra* note 8 (discussing Analysis Group's report issued on economic impacts of GCA).

130. *See* HIBBARD ET AL., *supra* note 39, at 38 (providing detailed economic projections of impact of GCA); Fitzgerald, *supra* note 8 (reporting on results of study).

131. Fitzgerald, *supra* note 8 (explaining benefits of green energy); *see also Renewable Portfolio Standards*, *supra* note 84 (noting significant economic benefit to states' renewable energy policies). Renewable energy policies help drive the nation's $36 billion market for wind, solar and other renewable energy sources. *See Renewable Portfolio Standards*, *supra* note 84. These policies can be integral to state efforts to diversify their energy mix, promote economic development, and reduce emissions. *See id. But see Net Metering: Hearing*, *supra* note 93, at 4 (referencing steady decline of manufacturing jobs in Massachusetts from 2002-2010). TransCanada asserts the primary reason large manufactures consider leaving Massachusetts is future energy costs. *See Net Metering: Hearing*, *supra* note 93 (quoting Dukakis Center for Urban and Regional Policy).

132. *See Net Metering: Hearing*, *supra* note 93 (noting business community's concern over more costly items in GCA not yet implemented); *see also* Fitzgerald, *supra* note 8 (alleging policy makers tend to serve interest of solar industry not ratepayers).

133. *See Renewable Energy Mandates*, *supra* note 95, at 10 (discussing states with RPS and states with pending legislation relative to adoption of RPS); *see also Renewable Portfolio Standards*, *supra* note 84 (listing states with RPS and states with voluntary targets).

134. *See* Philips, *supra* note 88 (indicating surplus of natural gas will keep prices low despite price volatility).

approach should dictate what power sources utilities should purchase from, rather than government intervening in the marketplace by incentivizing certain renewable power sources.[135]

Positive externalities, such as societal and environmental benefits provide a justification for government action.[136] Although renewable sources can be more expensive than electricity generated from natural gas or coal, rapidly declining costs altered this trend, making renewable energy prices competitive in a number of regions.[137] Supporters view potential added costs as worthwhile because renewables boost energy diversity and hedge against increasing fuel costs.[138] Renewables are also integral to many states' efforts to reduce pollutants and greenhouse gas emissions.[139] These positive externalities may not be fully recognized in an economic analysis of public policy, such as the GCA; government action, however, is likely still warranted because of the compelling societal and environmental benefits of growing the renewable energy sector, which diversifies energy resources and lessens reliance on fossil fuels.[140]

B. The Future of Wind Development in Massachusetts

The GCA set the framework for state promotion and facilitation of renewable energy development.[141] Policy goals, however, should focus on effectively incentivizing and supporting the creation of renewable energy facilities.[142] A complicated permitting process is widely considered to be one

135. *See Renewable Energy Mandates*, *supra* note 95, at 10 (discussing increasing trend of states considering RPS legislation). In 2013, "lawmakers in 17 states considered 30 bills to repeal [RPS] altogether, extend compliance deadlines for utilities, or reduce the percentage of renewable energy required." *Id.* None of the thirty bills were adopted, "although bills in nine states are pending or were carried over to [the 2014] session." *Id.*

136. *See* Stein, *supra* note 79, at 653 (discussing positive externalities as justification for government intervention).

137. *See Renewable Energy Mandates*, *supra* note 95 (implying benefits of renewable energy development outweigh higher costs).

138. *See id.* (claiming state policies may diversify energy mix).

139. *See id.* (claiming state policies may reduce emissions).

140. *See* Stein, *supra* note 79, at 653 (noting economists may characterize benefits of renewable energy as positive externalities). Societal and environmental benefits of renewable energy include: generating less climate-warming greenhouse gasses and air pollutants, eliminating impactful activities such as hydraulic fracturing, and lessening of dependence on finite resources. *See id.*; *see also* HIBBARD ET AL., *supra* note 39, at 2 (noting study not societal cost-benefit analysis).

141. *See* HIBBARD ET AL., *supra* note 39, at 1 (providing overview of GCA). "[T]he GCA represented a significant shift in the state's energy policy, focusing on a number of economic, environmental, and public policy objectives." *Id.* "The GCA sought to accomplish these objectives through many actions – all of which were designed to overcome barriers to the adoption of energy efficiency and renewable energy resources." *Id.*

142. *See* Kenna, *supra* note 84 (discussing strategies to lower electricity bills over long term). "[T]he region needs to diversify its energy mix by bringing in more wind, solar, hydropower, and other renewables. Having more renewable energy will cushion the region against the ups and downs of the gas market, while also reducing carbon emissions." *Id*. *But see* Wilkerson, *supra* note 84 (discussing example of need for curtailment of wind energy generation facilities).

of the largest impediments to greater renewable energy production.[143] In Massachusetts, all but the largest projects are required to obtain numerous permits from a multitude of state and local entities.[144] Conversely, in many neighboring states, a streamlined and expedited permitting process is available for much smaller projects.[145] As a result, renewable energy developers may be tempted to propose projects in other New England states rather than Massachusetts.[146]

In order to build upon the successes of the GCA, Massachusetts must adopt changes to make renewable energy siting more prompt and predictable.[147] Passage of legislation, such as the Comprehensive Wind Siting Reform Act, would provide a streamlined approach to wind facility permitting.[148]

> [The bill would] encourage the development of clean, renewable, electric generating [wind facilities], ensure that such facilities are sited in appropriate locations based on clear, predictable and protective environmental, cultural and historic resource standards and streamline the permitting of such facilities at the state and local level and reduce delays associated with appeals of such permits.[149]

The proposed legislation would provide an expedited permitting process for facilities of at least two megawatts, a notable improvement from the current 100 megawatts threshold.[150]

Under the proposal, Massachusetts would gain both a local permit process

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> Wind power is a growing source of energy in New England and this growth is being driven, in part, by state policies that support the development of renewable sources of energy . . . . [T]here are times when the ISO, local transmission service providers, or wind plant operators themselves must reduce or "curtail" the amount of power that these resources provide to the system. Curtailments generally arise when the maximum potential output of a resource would exceed the capacity of the existing transmission system.

Id.

143. *See* Outka, *supra* note 19, at 245 (noting industry trade association agreement states siting poses most significant challenge to development).

144. *See* TRC ENV. CORP., *supra* note 9, at 5-1 (discussing streamlined appeals process for projects greater than 100 megawatts).

145. *See id.* (categorizing Massachusetts permitting process as more restrictive than other New England states).

146. *See id.* at 3-1 (outlining difficulties of developers relative to Massachusetts permitting process).

147. *See id.* (evidencing developers value definitive timelines so permitting timely and predictable). Massachusetts should reform the permitting process for proposed wind-power development projects to include establishing a single project application that results in a single project certificate with conditions to address environmental issues and concerns of the host community. *See id.*

148. *See* H.R. 2980, 188th Leg. (Mass. 2014) (reforming siting process for land based wind projects in Massachusetts).

149. *Id.*

150. *See id.* § 6 (laying out expedited permitting process).

and a state permit process, paying due attention to local concerns while also furthering the statewide goal of promoting renewable energy development.[151] The Commonwealth would be able to identify municipalities with significant wind resource areas, which would trigger the establishment of a local wind energy permitting board to conduct a local permitting process.[152] Furthermore, the proposal also authorizes the state's EFSB to establish an expedited permitting process for land-based wind energy facilities of two megawatts or greater.[153]

Prior iterations of the bill were met with varying degrees of support in the legislature.[154] The legislative support already expressed, in conjunction with developer-friendly approaches in neighboring states, may indicate that Massachusetts is ready to adopt a more accessible, streamlined, and expedited renewable energy permitting process.[155]

C. The Future of Solar Development in Massachusetts

The Commonwealth's solar policy has proven successful and, as demand for solar continues to increase, the state must adapt its policies to accommodate the growing demand.[156] In May 2013, Massachusetts met its 2017 goal to have

151. *See id.* (providing for both local permit process and state permit process). The proposed local permit process would include the establishment of a local wind energy permitting board to conduct local permitting of wind energy facilities in municipalities identified as containing significant resources. *Id.* The bill provides for an expedited local permitting procedure for proposed wind energy facilities of 2 megawatts or greater. *Id.* The proposed bill also amends the existing state permitting process to account for local wind energy permitting board and to apply to facilities of 2 megawatts or greater. *Id.*

152. H.R. 2980, 188th Leg. (Mass. 2014) (explaining permitting process). The process would take into account all local laws, rules, regulations, bylaws and ordinances, including construction permits and permits associated with wetlands or other environmentally sensitive areas and may waive zoning or other regulatory requirements as deemed necessary. *See id.* The process would incorporate a public hearing and public comment period, with the entire process taking less than one year. *See id.* Finally, the proposal would empower the local board to issue any permit or approval otherwise required by any local board or official who would otherwise act with respect to the application. *See id.*

153. *See id.* § 8. The process also provides for two regional public hearings, a public comment period, and a comment period for the state agencies that would otherwise have jurisdiction, such as environmental agencies. *See id.* The standard of review is simply that the benefits of the proposed facility outweigh the detriments. *See id.* The period again will take no more than one year, and approval of a project would be in the form of a composite of all individual state permits, approvals, or authorizations, which would otherwise be necessary for the construction and operation of the facility. *See id.*

154. *See* Cheney, *supra* note 74 (reporting on status of bill). The bill did not advance reportedly because the mandates found in the bill were not fully vetted. *See id.*; *see also* H.R. 1775, 187th Leg. (Mass. 2011) (demonstrating committee heard bill but took no further action); H.R. 4955, 186th Leg. (Mass. 2009) (indicating committee reviewed bill but required no further action).

155. *See supra* note 67 and accompanying text (discussing former Governor Patrick's wind energy generation goals for Massachusetts); *supra* note 152 and accompanying text (discussing prior legislative support for bill); *see also supra* notes 145-146 and accompanying text (emphasizing developer-friendly permitting processes in states neighboring Massachusetts).

156. *See* Noucas, *supra* note 107 (discussing expectations for SREC-II in Massachusetts). Based on the structure of the program, state officials are optimistic SREC-II will be successful, bringing a large amount of solar energy to the Commonwealth. *See id.*

250 megawatts of solar power installed in Massachusetts.[157] The current RPS Solar Carve-Out also reached its 400 megawatt limit; the DOER, therefore, should build upon the success of SREC-I with a second installment of the program to maintain the growth of the solar PV market in Massachusetts.[158] Proposed draft regulations for the SREC-II program are well designed to achieve former Governor Patrick's latest goal to expand solar development to reach 1,600 megawatts by 2020.[159] It is also designed to meet the Patrick administration's policy objectives, such as to provide economic support, grow the solar industry, stabilize ratepayer costs, and minimize regulatory intricacy.[160]

In addition to SREC revenue, most non-residential solar projects also rely on the net metering credit incentive.[161] DOER should go beyond merely recognizing that current net metering caps are too low to support demand for solar growth and should take an affirmative stance on raising the net metering caps.[162] By moving from the existing net metering cap to a time-based cap, more projects can be constructed and communities will receive the associated energy cost savings.[163]

157. *See* SYLVIA, *supra* note 98 (presenting key elements of final design of SREC-II program).

158. *See SREC-II Solar Carve Out Policy Development*, *supra* note 99 (announcing DOER's active engagement in developing SREC-II Solar Carve-Out policy). At a roundtable in late 2013, Commissioner Mark Sylvia presented final details of the SREC-II program. *See* SYLVIA, *supra* note 98 (providing elements of SREC-II final program design).

159. *See* Runge, *supra* note 98 (reporting on recently released draft regulations for SREC-II program). *But see* Fitzgerald, *supra* note 88 (arguing new policies benefit solar industry and not ratepayers); SYLVIA, *supra* note 98, at 2 (referencing Governor Patrick's 1600 megawatts goal). Following a public hearing and comment period in early January 2014 on the draft regulations, DOER may make revisions before providing them to the Legislature's Joint Committee on Telecommunications, Utilities and Energy. *See* Runge, *supra* note 99 (providing update on draft SREC-II regulations).

160. *See* SYLVIA, *supra* note 98, at 4 (listing SREC-II policy objectives); *see also* Runge, *supra* note 98 (reporting on recently released draft regulations for SREC-II program). *But see* Fitzgerald, *supra* note 88 (arguing new policies benefit solar industry and not ratepayers).

161. *See* SYLVIA, *supra* note 98, at 11 (discussing SREC-11 and net metering).

162. *See id.*; *see also Concerning Net Metering*, *supra* note 104 (supporting H.R. 3901 and S. 2019 lifting net metering caps). "Simply put, absent net metering cap relief the phenomenal growth in solar development in the Commonwealth and the important environmental, economic development and energy security benefits such projects bring will come to a screeching halt." *Id.*; *see also Mass. Policy Priorities*, *supra* note 10 (supporting increasing net metering cap). "The current net metering cap limits development and impedes the state's ability to meet its goals." *Mass. Policy Priorities*, *supra* note 10. *But see Net Metering: Hearing*, *supra* note 93, at 15 (asking "[b]efore any more renewable program expansion . . . . Exempt manufacturing customers from solar and RPS obligation increases"). TransCanada asserts that Germany exempts its industrials from renewable surcharges to maintain their competitiveness. *See id.*

163. *See* Statement of Blanchard, *supra* note 106 (supporting lifting net metering cap). The Town of Palmer reached an agreement on a Net Metering Power Purchase Agreement projected to save the town between $6.2 and $7.8 million in electricity costs over a twenty-year operating period. *See id.* The project, however, just missed an allocation assignment under the most recent cap limit, and, although all of the necessary local permits are in place, the project has not yet been constructed. *See id.*

IV. CONCLUSION

The GCA and consequent related actions propelled Massachusetts to the forefront of renewable energy development. In Massachusetts, wind and solar is regulated through permitting and siting guidelines, mandates, such as renewable portfolio standards, incentives, and subsidies.

In order to cement its position as a national leader in renewable energy development and to continue to grow the installed wind and solar capacity, Massachusetts should build upon its successes by making some modest regulatory changes and by continuing critical programs. Specifically, by simplifying, consolidating, and streamlining the permitting and siting processes for wind energy facilities of a significantly lower capacity, policy makers can facilitate greater wind energy development without losing sight of important local concerns. Furthermore, continuing important solar subsidy programs—as DOER is doing with SREC-II, and moving to a time-based cap for net metering as proposed in the state legislature—will send a message to solar developers that Massachusetts is the place to do business. While the relevance of the economic impact of policies to promote renewable energy development is a topic long for debate, the positive externalities—the societal and environmental benefits to enacting such measures—justify and warrant continued government action.

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