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RENEWABLE RESOURCES AND THE DORMANT COMMERCE CLAUSE

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I. INTRODUCTION

One can hardly pick up a newspaper without being bombarded by political pundits and commentators debating the energy future of the United States.[1] From rising gas prices to increasing greenhouse gas emissions to the debate about fuel-efficient vehicles, the world is focused on the looming energy crisis.[2] The election year turmoil took already hot-button issues and plastered them into the public awareness, forcing every American to come to grips with the reality that the energy policy decisions made over the next decade will affect generations of people around the world.

Faced with a looming energy dilemma, politicians have begun to respond to calls for reevaluating energy policy at both the state and federal levels. Part II of this article outlines the current state of the U.S. energy market, which relies heavily on fossil fuels in all sectors. Our energy demands continue to increase as the economy expands and new electricity-intensive technologies reach the market.

On the home front, energy issues have become more of a

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1. *See, e.g.*, David J. Lynch, *Going Green for the Future; Energy Plan Touts Benefits*, USA TODAY, Oct. 6, 2008, at 7B; Renee Schoof, *Energy-Efficiency Need Called Urgent; Physicists Report - Suggests Energy Star Ratings for Entire Buildings*, THE SEATTLE TIMES, Sept. 17, 2008, at A8; Asjylyn Loder, *Algae as Fuel*, ST. PETERSBURG TIMES, Sept. 14, 2008, at 1D; Stanford L. Levin, *America's Future Could be - Should be - Tied to Clean-Coal Technology*, ST. LOUIS POST-DISPATCH, Sept. 9, 2008, at B7.

2. *See, e.g.*, Walter Simpson, *Going Climate Neutral; It's Possible to Adopt an Earth-Friendly Lifestyle*, BUFFALO NEWS, Apr. 20, 2008, at H1; Louis Sahagun, *Battle Over Energy Heats Up*, L.A. TIMES, Apr. 19, 2008, at A22.; Judy Stark, *Solar's Time to Shine*; SUN-SENTINEL, Dec. 29, 2007, at 1F.

concern. Global tensions affect the availability of imported oil, and the threat of terrorism endangers the fragile electric grid. In light of the heightened risks and inevitable exhaustion of fossil fuel resources, the justifications for considering renewable energy sources seem clear: Part III of this article outlines the advantages of renewable energy and discusses the intense capital costs required for its generation.[3]

Because of the high capital costs for renewable energy, politicians have proposed a variety of energy subsidies that would lessen the cost impact and make renewable energy more economically viable.[4] Part IV of this article lists and discusses the various political proposals that may render renewable energy more cost effective, including tax subsidies, rate-based approaches, and other market-based programs.[5]

The state-level programs, however, come with a catch: the Dormant Commerce Clause may limit a state's flexibility to promote and encourage renewable energy production. Part V of this article examines the Dormant Commerce Clause and the potential problems to energy policies raised by Dormant Commerce Clause analysis.[6]

But all is not lost: even though the Dormant Commerce Clause limits what states can do to incentivize renewable energy development, Part VI of this article outlines four major options that still exist.[7] First, states can pursue limited pseudo-protectionist measures and still fit within the confines of the Dormant Commerce Clause. Second, states, in conjunction with local authorities, can utilize permitting approval under their state police powers to more efficiently assist the placement and construction of renewable energy generation facilities within the state. Third, the federal government can create a national structure to enable states to perform limited and short-term protectionist measures to encourage renewable energy production. Fourth, because of the unbundling effects of deregulation, renewable energy can be directly marketed to consumers who might pay a premium to offset some of the costs.

While none of these measures is perfect, the combination of all of them provides some level of incentive. This incentive-based approach preserves market initiatives and competition, while deferring some of the start-up capital costs of renewable energy

3. *See infra* Part III.
4. *See infra* Part IV.
5. *See id*.
6. *See infra* Part V.
7. *See infra* Part VI.

generation.[8] By bringing renewable energy costs more in line with conventional energy costs, states can encourage the adoption of environmentally- and national security-friendly energy technologies.

II. THE CURRENT STATE OF THE ENERGY MARKET

The United States annually consumes large amounts of energy derived from fossil fuel sources, and this consumption does not appear likely to decrease in the foreseeable future. The United States currently consumes more than 100 quadrillion British Thermal Units ("quads BTU") of energy per year.[9] The Energy Information Administration ("EIA")[10] projects this number to increase to approximately 118 quads by the year 2030.[11] Broken down by end-use, sector energy consumption fits into four major shares: industrial (33%), transportation (27%), residential (22%), and commercial (18%).[12] This energy largely comes from fossil fuel sources, with petroleum driving the transportation industry and coal providing the basis for most electricity generation.[13]

These large sums of energy carry with them a hefty bill: even as the price of oil shot up to $140 a barrel, the costs of natural gas and coal both increased.[14] From 2005 to 2007, residential end-users saw their electricity prices go up by almost 13%, from 9.4 cents/kWh to 10.6 cents/kWh.[15] The EIA predicts that these costs will continue to rise.[16]

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8. *See infra* Part VII.

9. ENERGY INFO. ADMIN., U.S. ENERGY MARKETS SUMMARY (2009), http://www.eia.doe.gov/ (follow "Short-term Energy Outlook" hyperlink; then "U.S. Energy Market Summary" hyperlink) [hereinafter U.S. ENERGY MARKET SUMMARY].

10. The EIA is a federal agency tasked with monitoring and reporting data about the United States energy marketing. *See* ENERGY INFO. ADMIN., ABOUT EIA, http://tonto.eia.doe.gov/abouteia (last visited Mar. 28, 2009).

11. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2008 at 3 (June 2008), http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2008).pdf [hereinafter ANNUAL ENERGY OUTLOOK 2008].

12. JOSEPH P. TOMAIN & RICHARD D. CUDAHY, ENERGY LAW IN A NUTSHELL 45, (West Law School) (2004).

13. U.S. ENERGY MARKET SUMMARY, *supra* note 9. In 2007, the United States consumed 20.68 billion barrels of petroleum per day, 63.16 billion cubic feet per day of natural gas, 1,129 million short tons of coal, 10.66 billion kilowatt hours of electricity, and 6.84 quads of renewable energy. *Id*.

14. ENERGY JUSTICE NETWORK, PEAK ENERGY PRODUCTION (COAL, OIL, NATURAL GAS, AND URANIUM), http://www.energyjustice.net/peak/ (last visited Mar. 28, 2009).

15. ENERGY INFO. ADMIN., U.S. REGIONAL ELECTRICITY PRICES (2009), http://www.eia.doe.gov/ (follow "Short-term Energy Outlook" hyperlink; then "U.S. Regional Electricity Prices" hyperlink; then change frequency to a start year of "2005" and an end year of "2007").

16. *Id*.

Despite recent volatility in the market for oil futures, the long-term outlook continues to suggest that gas prices will rise.[17] Even with rising oil, coal, and natural gas prices, energy demand in the United States remains strong.[18] The EIA estimates energy demand growth of as high as 1.0% annually over the next twenty years, despite increased energy efficiency, decreased use of residential lighting, and decreased energy use per dollar of gross domestic product.[19] This continued growth will necessitate the development of new or expanded generation sources, as well as the transmission and distribution capacity to deliver the energy to consumers.[20]

The upward pressure on electricity demand will not disappear. New technologies will result in increased demand for electric energy.[21] In particular, after seeing the commercial success of hybrid vehicles, some automakers plan to roll out plug-in hybrid electric vehicles ("PHEV") or fully electric vehicles within a few years;[22] the Chevrolet Volt and the Tesla Roadster were developed in response to rising gas prices.[23] Automakers intend for car owners to recharge their vehicles at night.[24] While recharging at night produces some benefits, primarily through raising off-peak demand that levels out the traditional evening power load valleys, it is not clear what effect this will have on the electric grid.[25] For example, requiring additional power in the

17. ANNUAL ENERGY OUTLOOK 2008, *supra* note 11, at 83.

18. *See, e.g.*, Ariel Schwartz, *Demand For Coal Climbing Rapidly Around The World*, CLEANTECHNICA.COM, July 30, 2008, http://cleantechnica.com (type the article title into the search box; follow the resulting article hyperlink) ("According to the U.S. Department of Energy, 258 gigawatts of new generating capacity are needed to meet an expected 40% increase in consumption by 2030, and coal companies are stepping up to meet this need.").

19. ANNUAL ENERGY OUTLOOK 2008, *supra* note 11, at 58.

20. Jason Fordney, *Experts Say Strong Federal Authority Needed to Expand US Electrical Grid*, INSIDE ENERGY WITH FEDERAL LANDS, www.platts.com, Oct. 20, 2008, at 6. *See also* ORG. FOR ECON. CO-OPERATION AND DEV., INFRASTRUCTURE TO 2030: MAPPING POLICY FOR ELECTRICITY, WATER AND TRANSPORT 263 (2007) ("Underinvestment in transmission and distribution networks may compromise system reliability.").

21. ANNUAL ENERGY OUTLOOK 2008, *supra* note 11, at 67.

22. John Gartner, *PHEVs: Will the Grid Be Ready?*, MATTER NETWORK, Oct. 23, 2008, http://featured.matternetwork.com/2007/2/plug-hybrids-will-power-grid.cfm.

23. CalCars.org, All About Plug-In Hybrids (PHEVs), http://www.calcars.org/vehicles.html (last visited Mar. 28, 2009). A Chinese company, the Zhejiang 001 Group, recently rolled out plans for a $5,560 solar-powered car. Alex Felsinger, *Chinese Company Unveils Solar-Powered Car for $5,560*, GAS 2.0 (Oct. 16, 2008), *available at* http://gas2.org/2008/10/16/chinese-company-unveils-solar-powered-car-for-5560/. The impact of these types of vehicles (and their potential efficiencies) are not yet clear.

24. CalCars.org, *supra* note 23.

25. Gartner, *supra* note 22. The potential impacts on the transmission grid depend primarily on the rate of adoption of PHEV. If adoption is widespread, the transmission

evenings may make it more difficult for generators to perform routine maintenance.[26] The additional line stress of a continued load may affect transmission and distribution lines in unexpected ways.[27] Additionally, some reports suggest that the environmental benefits of PHEV and electric vehicles will be less than advertised.[28]

In short, without a move toward renewable generation sources, the move toward electric vehicles may not reduce fossil fuel reliance, but merely adjust the ratio of fossil fuels on which we rely. Electric vehicles may reduce reliance on oil, but, when decoupled from renewable generation of electricity, they may not reduce reliance on other fossil fuels, such as coal.[29] While this reduction in the reliance on foreign oil furthers national security goals, the move from oil to increased coal does not necessarily result in a victory for environmentalists. For the foreseeable future, the United States will require significantly increased generation capacity, and it appears that much of this will come from fossil fuel sources.

III. RENEWABLE ENERGY

A. Overview

Over the last decade, calls for renewable energy could be heard from every segment of the United States.[30] Even major oil companies have jumped on the renewable energy bandwagon.[31] Many scholars have noted the exciting prospects of renewable energy, as well as the potential challenges that come with

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grid could be significantly impacted. Conversely, if adoption is slow, utilities will likely have enough time to expand the grid to meet the growing demand.

26. *Id*.

27. *Id*.

28. *Id*. That is, while electric vehicles reduce oil consumption, they still require electricity, which is primarily generated in fossil-fuel burning power plants. This may reduce reliance on foreign oil, but depending on the generation fuel mix and relevant environmental safeguards, the anticipated environmental benefit may be significantly less than imagined.

29. *Id*.

30. *See, e.g.*, Simpson, *supra* note 2, at H1; Sahagun *supra* note 2, at A22*;* Stark, *supra* note 2, at 1F.

31. *See, e.g.*, Chevron Human Energy Commercial, *available at* http://www.youtube.com/watch?v=RjbUHGkucfs (noting the push toward renewable energy and proposing an oil company as the solution) (last visited Mar. 28, 2009); British Petroleum Commercial, *available at* http://www.youtube.com/watch?v=3rklKyFMUME (identifying BP slogan as "Beyond Petroleum") (last visited Mar. 28, 2009); Shell Commercial, *available at* http://www.youtube.com/watch?v=l2i4CxyrT64 (showing how oil companies go to great lengths to utilize the last remaining oil resources) (last visited Mar. 28, 2009).

utilizing those renewable fuels.[32] Some scholars have been calling for renewable energy for decades, but those scholars tended to be concerned with the environmental impact of fossil fuels.[33] Most recently, energy independence has been touted as a national security issue;[34] with heavy reliance on foreign imports for oil, many Americans believe that utilizing a mix of renewable resources is essential to American security in the future.[35]

B. What is "Renewable Energy"?

The United States currently uses approximately twenty-three percent of all the energy in the world.[36] Yet despite this high energy allotment, only a fraction comes from renewable sources.[37] But this begs the question: what exactly is "renewable energy?"; "an energy source is renewable when it 'can be utilized without any discernable reduction in [its] future availability.'"[38] Yet while

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32. *See, e.g.*, Jared Wiesner, *A Grassroots Vehicle for Sustainable Energy: The Conservation Reserve Program & Renewable Energy*, 31 WM. & MARY ENVTL. L. & POL'Y REV. 571, 572-73 (2007); Lakshman Guruswamy, *Sustainable Energy: A Preliminary Framework*, 38 IND. L. REV. 671, 671-72 (2005).

33. *See, e.g.*, Steven Ferrey, 15 DUKE ENVTL. L. & POL'Y FORUM 261, 274 (2005) ("But hope is on the way, in the form of renewable technologies, cogeneration and distributed production. Renewable technologies are cleaner than fossil fuel-fired technologies, and cogeneration may have similar benefits for the environment. And in most applications, distributed electric production tends to decrease air emissions.") The environmental benefits of renewable energy have increasingly come to the forefront in the debate over climate change. While greenhouse gases ("GHG") have not traditionally been regulated under the Clean Air Act, landmark cases such as *Massachusetts v. EPA*, 549 U.S. 497 (2007), have provided more impetus to action on GHG emissions. Other major GHG cases include *Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie*, 508 F. Supp. 2d 295 (D. Vt. 2007), and *Central Valley Chrysler-Jeep, Inc. v. Goldstone*, No. CV F 04-6663 AWI LJO, 2007 WL 4372878 (E.D. Cal. Dec. 11, 2007).

34. The fragile nature of the electricity grid results in situations where small disruptions can have catastrophic consequences. In August of 2003, a tree fell into a power line in Ohio. This interruption cascaded into a multi-day blackout affecting much of the eastern United States, as power plant after power plant went offline. U.S.-CANADA POWER SYSTEM OUTAGE TASK FORCE, INTERIM REPORT: CAUSES OF THE AUGUST 14TH BLACKOUT IN THE UNITED STATES AND CANADA 1 (2003), *available at* http://www.nerc.com/filez/blackout.html. As terrorism concerns continue to affect many Americans, public officials have attempted to raise awareness of the dangers that a series of terrorist attacks could have on the electricity transmission and distribution systems throughout the United States. Ferrey, *supra* note 33, at 275-76.

35. *See* Ferrey, *supra* note 33, at 268-70: "A significant amount of exportable natural gas is located in politically unstable, diplomatically unfriendly, or openly hostile countries. This increasing dependence for natural gas imports for electric power plants will influence geopolitics, U.S. foreign relations, and diplomacy. . . . Our supply is limited. Our appetite is not."

36. WORLD POPULATION BALANCE, POPULATION AND ENERGY CONSUMPTION, http://www.worldpopulationbalance.org/pop/energy/ (last visited Mar. 28, 2009).

37. *Id*.

38. Patrick R. Jacobi, *Renewable Portfolio Standard Generator Applicability Requirements: How States can Stop Worrying and Learn to Love the Dormant Commerce*

scholars have suggested this definition, Congress has struggled to define what precisely constitutes "renewable energy."[39] For example, in the Renewable Energy Initiative, Congress defined renewable energy as "any energy resource which has recently originated in the sun, including direct and indirect solar radiation and intermediate solar energy forms such as wind, ocean thermal gradients, ocean currents and waves, hydropower, photovoltaic energy, products of photosynthetic processes, organic wastes and others."[40]

When determining a definition of renewable resources for foreign aid, however, Congress outlined a five point test, which required a renewable resource to "(1) meet the needs of rural communities; (2) save capital without wasting labor; (3) be modest in scale, simple to install and maintain, and be managed by local individuals; (4) be acceptable and affordable; and (5) not damage the environment."[41]

Even if people throw around the renewable energy "buzz word," it is not clear that politicians even agree on which sources of energy should be prioritized. This basic lack of agreement over priorities creates additional difficulty in galvanizing support for renewable energy. This paper recognizes five major types of renewable energy: wind, solar, biomass,[42] geothermal,[43] and hydroelectric power.[44]

Clause, 30 VT. L. REV. 1079, 1083 (2006) (quoting FRED BOSSELMAN ET AL., ENERGY, ECONOMICS, AND THE ENVIRONMENT 113 (2000)).

39. *See* Steven Ferrey, *Sustainable Energy, Environmental Policy, and States' Rights: Discerning the Energy Future Through the Eye of the Dormant Commerce Clause*, 12 N.Y.U. ENVTL. L.J. 507, 573-74 (2004).

40. 42 U.S.C. § 7372 (2000).

41. 22 U.S.C. § 262j(b) (2000). *See also* Wiesner, *supra* note 32, at 572 ("Renewable energy sources . . . are defined as energy obtained from sources at a rate that is less than or equal to the rate at which the source is replenished.") (citations omitted).

42. Biomass includes: agricultural residues generated after each harvesting cycle of commodity crops; energy crops produced solely or primarily for use as feedstocks in energy generation; forestry residues remaining in forests that have been harvested for timber; and urban wood waste/mill residues from manufacturing operations that would otherwise be landfilled. ZIA HAQ, ENERGY INFO. ADMIN., BIOMASS FOR ELECTRICITY GENERATION 5,6, http://www.eia.doe.gov/oiaf/analysispaper/biomass/pdf/biomass.pdf.

43. "Geothermal energy is contained in underground reservoirs of steam, hot water, and hot dry rocks. As used at electric generating facilities, hot water or steam extracted from geothermal reservoirs in the Earth's crust is supplied to steam turbines at electric utilities that drive generators to produce electricity. Moderate-to-low termperature [sic] geothermal resources are used for direct-use applications such as district and space heating. Lower temperature, shallow ground, geothermal resources are used by geothermal heat pumps to heat and cool buildings." ENERGY INFO. ADMIN., GEOTHERMAL ENERGY (Apr. 2008), http://www.eia.doe.gov/cneaf/solar.renewables/page/geothermal/geothermal.html**.**

44. Jacobi, *supra* note 38, at 1083 (citing BOSSELLMAN, *supra* note 38, at 113-15). Other lists include: "[W]ind, solar, wave, tidal and ocean thermal energy, non-treated

Renewable energy does not currently make up a significant portion of the energy mix in the United States.[45] As of 2006, renewable sources accounted for approximately seven percent of the energy produced in the United States.[46] This was led by hydropower (at 2.89 quads) and wood-derived biomass (at 2.114 quads).[47] These two sources combined make up three-fourths of the renewable energy produced.[48] In comparison, solar/photovoltaic energy produced 0.07 quads in 2006, and wind energy produced 0.258 quads.[49] Even though renewable energy does not make up a significant portion of the energy generation, it continues to grow.[50] From 2005 to 2006, "[h]ydroelectric conventional power had the largest absolute year-to-year change at 186 trillion BTU, but this represented only a seven percent increase, while biofuels consumption increased by 164 trillion BTU or twenty-eight percent, and wind increased by 80 trillion BTU or forty-five percent."[51] Production of photovoltaic panels continues to increase, reaching 337,268 peak kilowatts in 2006.[52] While this is a significant increase of previous years, it only has the capacity to generate 1/3 as much energy during peak times as a single coal-fired plant can produce twenty-four hours a day.[53] In short, renewable energy generation is growing, but it is currently not growing at a significant enough pace to contribute substantial changes to the energy mix or supplant fossil fuel generation sources.[54]

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wood, organic human or animal waste, spent pulping liquor, forest or rangeland woody debris from harvesting or thinning, agricultural residues, dedicated energy crops, landfill gas or biogas produced from organic matter, wastewater, anaerobic digesters or municipal solid waste, geothermal energy, certified low-impact hydro less than 50 MW, waste gas and waste heat capture . . . ." Harriet King, *PacifiCorp's new 500-MW renewables RFP is key piece in 2,000-MW target*, ELEC. UTIL. WK. (Oct. 13, 2008).

45. ENERGY INFO. ADMIN., RENEWABLE ENERGY CONSUMPTION AND ELECTRICITY PRELIMINARY 2006 STATISTICS 5 (2007), http://www.eia.doe.gov/cneaf/solar.renewables/page/prelim_trends/pretrends.pdf [hereinafter RENEWABLE ENERGY CONSUMPTION].

46. *Id*.

47. *Id*.

48. *Id*.

49. *Id*.

50. RENEWABLE ENERGY CONSUMPTION, *supra* note 45.

51. *Id*.

52. ENERGY INFO. ADMIN., ANNUAL SHIPMENTS OF PHOTOVOLTAIC CELLS AND MODULES 1997 – 2006 (2008), http://www.eia.doe.gov/cneaf/solar.renewables/page/rea_data/table2_19.pdf.

53. Many coal-fired power plants can generate upwards of 1000 MW of power. ENERGY INFO. ADMIN., EXISTING CAPACITY BY ENERGY SOURCE, 2007 (Jan. 21, 2009), http://www.eia.doe.gov/cneaf/electricity/epa/epat2p2.html.

54. Google has recently proposed a clean energy plan for the United States. *See Google Chalks Out Clean Energy Plan For US,* HINDU, Oct. 3, 2008, http://www.hindu.com/thehindu/holnus/001200810031851.htm. Even with cutting-edge technology and top-quality engineering, Google's optimistic plan forecasted costs of $4.4

C. Potential Problems with Renewable Energy

Despite many of the overwhelming positives for renewable energy, it has not been widely adopted. The primary hurdle to the adoption of renewable energy is the cost.[55] Most renewable energy facilities rely on sources such as wind or solar energy and these sources lack consistency as wind may blow for long periods of time, or not at all. One study notes "the annual capacity factor of wind generators is typically about [twenty-five to thirty-five] percent. However, the probability that wind generators are available at their rated value during the annual peak period is only between [five to twenty] percent. Wind cannot be considered a reliable baseload capacity resource."[56]

Similarly, solar energy is available during the day, but at night or during overcast days, a source that relies entirely on solar energy cannot maintain consistent levels of energy generation.

Inconsistent levels of energy generation pose significant problems for utilities. Utilities must maintain a consistent ability to distribute power on an as-needed basis. In general, this engenders a large degree of waste, as utilities maintain "peaker" facilities[57] to meet heightened demand, while utilizing more capital-intensive but low operating cost base facilities[58] to meet the "base" load. The inability to operate at consistent, sustainable levels reduces the practicality of considering wind and solar as reliable baseload capacity resources and requires utilities to maintain expensive baseline units and peaker facilities to bridge reliability gaps.[59] If the renewable sources are

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trillion to move over to more renewable resources within 25 years. *Id.*

55. *See, e.g.*, Gail Roberts & Jeff Ryser, *As Credit Crisis Deepens, Some Utilities Take Steps to Soften Impact*, ELEC. UTIL. WK., Oct. 13, 2008.

56. NEXTGEN ENERGY COUNCIL, LIGHTS OUT IN 2009?, http://www.nextgenenergy.org/Portals/NextGen/studies/Nextgen_Lights_Out_Study.pdf (Sep. 2008).

57. These facilities are typically low-capital, high-operating cost units such as natural gas turbines. ILL. ENVTL. PROT. AGENCY, PEAKER POWER PLANT FACT SHEET, http://www.epa.state.il.us/air/fact-sheets/peaker-power-plant.html (last visited Mar. 28, 2009).

58. *Id*. These include facilities such as hydro, nuclear, and coal-fired power plants. *Id*.

59. The reliability problems primarily affect solar and wind. Geothermal sources are able to maintain standard levels of production, as are hydro sources. *See* Wiesner, *supra* note 31. Hydropower sources can have fluctuations, but these tend to be seasonal fluctuations dependent on water level, not major fluctuations in generating capacity within a single day. *See* AM. COUNCIL ON RENEWABLE ENERGY, HYDROELECTRIC POWER, http://www.acore.org/what_is_renewable_energy/hydroelectric_power (last visited on Mar. 13, 2009). Other renewable sources, such as biomass, maintain higher levels of consistency. Wiesner, *supra* note 31, at 588.

used, they can offset operating costs during certain periods, but they do not remove the need for large capital investment in base plants.

Two potential solutions exist. First, energy acquired during high generation periods can be stored in batteries to be utilized during periods of low generation.[60] Unfortunately, as of yet this is not a realistic solution; not only are battery systems prohibitively expensive, but also the conversion to battery and back results in massive energy losses.[61] For the short-term future, batteries are not a solution to the problems posed by renewable energy.[62] Second, many "renewable energy-production facilities require backup from facilities using fossil fuels."[63] Rather than utilizing batteries, the renewable energy facilities have a fossil-fuel backup system to provide power during times when the renewable energy sources are not available.[64]

The result of this is essentially to require either an expensive battery system (and subsequent energy loss) or a second fossil fuel facility. Either way, the impact is similar; the cost of providing energy derived from renewable sources is disproportionately high when compared to the price of energy derived from fossil fuel sources.[65] These high initial capital costs have disincentivized investment in the renewable energy sector.[66]

The EIA reports that wind energy can cost upwards of $620

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60. Gary Moland, *Windpower's Warning*, 146 NO. 5 PUB. UTIL. FORT. 58, 59-60 (2008) (discussing limitations of current battery technology, as well as the potential for technological growth and increasing economic feasibility).

61. *Id*. at 60 ("Current battery technology also has a 20 to 30 percent loss of energy during the charge and discharge cycle, meaning for every 100 MW of wind output stored in a battery, only 70 to 80 MW reaches the grid for consumption.").

62. *Id*. It is worth noting, however, that some battery technology is moving closer to becoming feasible, even if not quite on the large-scale industrial size needed for massive generation and storage projects. For example, a recent press release from KEMA, Inc. showed significant progress in the potential for electric utility use of new battery storage technology. *See* Press Release, KEMA, KEMA Highlights Potential for Electric Utility Application of Emerging Battery Storage Technology, http://www.kema.com/corporate/news/corporate/2008/q3/kema_highlights_potential_for_electric_utility_application_of_emerging_battery_storage_technology.asp (last visited on Mar. 28, 2009).

63. Jacobi, *supra* note 38, at 1084 (citing BOSSELMAN, *supra* note 38, at 115).

64. *Id*.

65. Inho Choi, *Global Climate Change and the Use of Economic Approaches: The Ideal Design Features of Domestic Greenhouse Gas Emissions Trading with an Analysis of the European Union's CO2 Emissions Trading Directive and the Climate Stewardship Act*, 45 NAT. RESOURCES J. 865, 877-79 (2005) (noting that effective environmental regulation must be aligned with industry profit motive); Mona Hymel, *The United States' Experience with Energy-Based Tax Incentives: The Evidence Supporting Tax Incentives for Renewable Energy*, 38 LOY. U. CHI. L.J. 43, 74-76 (2006) (noting the high costs of renewable energy prevent widespread public adoption of new renewable technologies).

66. Choi, *supra* note 65, at 877-79; Hymel, *supra* note 66, at 74-76.

per installed kW capacity.[67] Because of the annual capacity factor mentioned previously, an adjusted value is in the range of $1,700 to $2,500 per installed kW.[68] While there are no fuel costs with wind energy, maintenance costs also contribute to the expense.[69]

Solar energy also requires substantial capital investments. Solar thermal energy costs nearly $3,900 per installed kW,[70] and photovoltaics cost more than $5,800 per installed kW.[71] Even optimistic evaluations of the price of solar amortized over a lifetime put the cost around 38 cents per kW.[72] While many people have hoped to see prices for solar panels drop with increased production levels, those benefits have not yet been realized.[73]

In comparison, fossil fuel costs are substantially lower. Capital costs for natural gas combined cycle generation are about $750 per installed kW, coal costs about $1,600 per installed kW, and nuclear costs about $2,600 per installed kW.[74] While fossil fuel generation sources must burn fuel, the marginal cost of that fuel is relatively inexpensive. Fuel for coal costs approximately $0.006 per kWh, oil costs approximately $0.05 per kWh, and natural gas costs approximately $0.03 per kWh.[75] These numbers illustrate the vast price discrepancy between renewable energy sources and fossil fuel sources for energy generation.

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67. ENERGY INFO. ADMIN., WIND DEVELOPMENT COSTS, http://www.eia.doe.gov/cneaf/solar.renewables/renewable.energy.annual/backgrnd/chap10g.htm (last visited Mar. 5, 2009). This analysis evaluates the price of wind capacity with steady 13 mile per hour winds. *Id.,* at note 13. While using this number in the analysis makes wind appear more cost-competitive, the wind does not blow at a constant rate, nor is it fair to assume that most places in the continental United States would be able to support average winds at that rate. NATL RENEWABLE ENERGY LAB., WIND ENERGY RESOURCE ATLAS OF THE UNITED STATES, http://rredc.nrel.gov/wind/pubs/atlas/maps.html (last visited Mar. 13, 2009).

68. *See* NEXTGEN ENERGY COUNCIL, *supra* note 56 and accompanying text.

69. Moland, *supra* note 60.

70. NEXTGEN ENERGY COUNCIL, *supra* note 56.

71. *Id.* (*citing* ANNUAL ENERGY OUTLOOK 2008, *supra* note 11, that ("[t]he EIA estimates are 'overnight' costs and exclude financing and related costs.")).

72. GREEN ECONOMETRICS, UNDERSTANDING THE COST OF SOLAR ENERGY, Apr. 13, 2007, http://greenecon.net/understanding-the-cost-of-solar-energy/energy_economics.html (last visited Mar. 28, 2008).

73. *See* Brian Womack, *Solar Panel Prices Might Not Decline As Much As Thought*, INVESTOR'S BUS. DAILY, A04 (Sep. 5, 2008).

74. NEXTGEN ENERGY COUNCIL, *supra* note 56 Nuclear costs, however, are difficult to estimate: some sources suggest that as much as 60% of the capital cost of nuclear units results from regulatory and time lag factors. ORG. FOR ECON. CO-OPERATION AND DEV., NUCLEAR ENERGY AGENCY, REDUCTION OF CAPITAL COSTS IN NUCLEAR PLANTS 70 (2000). As nuclear generation exploits economies of scale, capital costs can fall to under $1,600 kW (in 1997 dollars). *Id.* at 40.

75. Womack, *supra* note 73.

The high capital costs of renewable energy combined with the inability to provide steady and consistent power creates considerable hurdles. Without cost-effective industrial battery technologies, renewable sources cannot provide consistent levels of power, negating their ability to operate as base load facilities. This necessitates reliance on fossil-fuel generation sources as base facilities, with renewable generation plants utilized on an as-operable basis. Unfortunately, the costs of as-operable generation outweigh the marginal generating cost of fossil fuel plants.[76] As long as these renewable costs continue to remain high, any utility that adopts them at full price is at a cost disadvantage to its competitors.[77]

D. Past Attempts to Make Renewable Energy a Viable Solution

The high cost of renewable energy is not news to Washington. Over the past thirty years, Congress has repeatedly attempted to address energy questions and subsidize some portion of the expense for renewable energy generation.[78] Chief

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76. Somewhat presciently, this phenomenon was predicted at the beginning of the move toward retail wheeling. *See* Douglas Heinold, Note and Comment, *Retail Wheeling: Is Competition Among Energy Utilities an Environmental Disaster, or Can It Be Reconciled With Integrated Resource Planning?*, 22 RUTGERS COMP. & TECH. L.J. 301 (1996) (arguing that deregulation and wheeling would result in cost competition among utilities. While this competition brings down prices for end-consumers, it makes it difficult for utilities to adopt higher marginal cost renewable energy systems).

77. *Id*.

78. The major energy industry bills passed by Congress within the past few decades include: the Coastal Zone Management Act of 1972, the Crude Oil Windfall Profit Tax of 1980, the Economic Stabilization Act of 1970, the Electric Consumers Protection Act of 1986, the Emergency Energy Conservation Act of 1979, the Emergency Petroleum Allocation Act of 1973, the Energy Conservation and Policy Act, the Energy Conservation and Production Act of 1976, the Energy Policy Act of 1992, the Energy Policy Act of 2003, the Energy Policy and Conservation Act of 1975, the Energy Reorganization Act of 1974, the Energy Security Act of 1980, the Energy Security Act of 2003, the Energy Supply and Environmental Coordination Act of 1974, the Federal Energy Administration Act of 1974, the Geothermal Steam Act of 1970, the Low-Level Radioactive Waste Policy Act, the National Environmental Policy Act of 1969, the Natural Gas Policy Act of 1978, the Natural Gas Wellhead Decontrol Act of 1989, the Oil Pollution Liability and Compensation Act of 1990, the Outer Continental Shelf Lands Act, the Public Utilities Regulatory Policy Act, the Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989, the Resource Conservation and Recovery Act of 1976, the Solar Energy Research Development and Demonstration Act, the Surface Mining and Reclamation Act of 1977, and the Uranium Mill Tailings and Radioactive Control Act of 1978. Faced with the multitude of Congressional action taken over the past few decades, it immediately becomes apparent that Congress is aware of the energy issues facing the United States.

For an overview of Congressional approaches toward encouraging development of wind energy resources, *see generally* L. BIRD, ET AL., NAT'L RENEWABLE ENERGY LAB., POLICIES AND MARKET FACTORS DRIVING WIND POWER DEVELOPMENT IN THE UNITED STATES, , NREL/TP-620-34599, 1, 36 (July 2003) (cited in STEVEN FERREY, 1 L. OF INDEP. POWER §

among these attempts was the Public Utility Regulatory Policies Act ("PURPA"), passed in 1978.[79] Pushed by President Carter, Congress passed PURPA with the intention of promoting greater use of renewable energy.[80]

PURPA contained three major policy provisions. First, it promoted a move from declining block ratemaking because declining block ratemaking promoted consumption.[81] Second, it moved toward more efficient marginal cost pricing.[82] Third, it "encouraged independent power production through co-generation[83] and small power generation."[84] PURPA required utilities to buy power from Qualifying Facilities ("QFs")[85] at the

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4:1 (2008) [hereinafter FERREY, L. OF INDEP. POWER]).

79. 16 U.S.C. § 2601 *et seq.* (1978).

80. *See id*.

> ("The Congress finds that the protection of the public health, safety, and welfare, the preservation of national security, and the proper exercise of congressional authority under the Constitution to regulate interstate commerce require--
>
> (1) a program providing for increased conservation of electric energy, increased efficiency in the use of facilities and resources by electric utilities, and equitable retail rates for electric consumers,
>
> (2) a program to improve the wholesale distribution of electric energy, the reliability of electric service, the procedures concerning consideration of wholesale rate applications before the Federal Energy Regulatory Commission, the participation of the public in matters before the Commission, and to provide other measures with respect to the regulation of the wholesale sale of electric energy,
>
> (3) a program to provide for the expeditious development of hydroelectric potential at existing small dams to provide needed hydroelectric power,
>
> (4) a program for the conservation of natural gas while insuring that rates to natural gas consumers are equitable,
>
> (5) a program to encourage the development of crude oil transportation systems, and
>
> (6) the establishment of certain other authorities as provided in title VI of this Act.")

When Congress enacted PURPA, it also enacted Pub. L. No. 95-618, the Energy Tax Credit Act, which included the Business Investment Credit (§ 46) and the Energy Credit (§ 48). These provided tax credits for solar and wind powered energy property, recycling equipment, shale oil equipment, and alternative energy property.

81. 16 U.S.C. § 2621(d)(2). Declining block ratemaking is the process by which the rates customers pay for power decline as their consumption increases. The return of capital occurs early in the generation cycle and primarily affects the first energy sold in a given time period. As usage increases, rates fall. While this provides an early return to utilities and more accurately reflects their marginal generation costs, declining block ratemaking provides perverse incentives for consumers to utilize more energy.

82. *Id*. at § 2621(d)(1).

83. Co-generation is the process by which plants produce electric power in combination with steam. The steam is then used for things such as heating. PURPA furthered co-generation primarily because of the increased efficiency through limiting the loss of thermal energy.

84. TOMAIN & CUDAHY, *supra* note 12, at 271.

85. "PURPA section 210 breaks the utility monopoly on generation of electric power

utility's avoided cost.[86] The builder of a QF could virtually guarantee a market for electricity by selling it back to a utility at the marginal cost of the utility, primarily composed of the fuel costs incurred.[87] PURPA thus enabled enterprising pioneers to build renewable resource-driven QFs with a guaranteed market for power at a set price.[88] Unfortunately, even with guaranteed markets, PURPA did not result in the widespread development of renewable energy.[89]

Congress next tried to catalyze the development of renewable energy with the Energy Policy Act of 1992 ("EPAct '92").[90] One of the primary impacts of the EPAct '92 was the creation of the Renewable Electricity Production Credit ("REPC"), which is a "per-kilowatt hour tax credit for electricity generated by qualified energy resources."[91] EPAct '92 also provided tax incentives for private-sector development of renewable energy generation sources.[92] The Act promoted the concept of exempt wholesale generators ("EWGs"). The idea behind EWGs was that by eliminating integration requirements in conjunction with state decisions on bidding or competition, a competitive electric supply wholesale market would develop.[93] EWG's would permit competition in all areas of power production.[94]

In 2005, Congress passed the Energy Policy Act of 2005 ("EPAct '05").[95] The EPAct '05 created the Production Tax Credit ("PTC"), which is a tax credit for qualified electricity producing

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specifically for certain types of power production. It creates a new, privileged class of commercial entities known as . . . QFs. To qualify as a QF, a project must meet certain facility-specific and sponsor-specific criteria. In turn, PURPA requires utilities to interconnect with QFs, to purchase their power, and to supply them with supplemental or backup power. Moreover, QFs are exempt from most state and federal laws regulating power generation. The price at which utilities must purchase power from QFs is determined not by QF costs nor by traditional regulatory principles. It is determined by the incremental cost of power for the purchasing utility." FERREY, L. OF INDEP. POWER, *supra* note 78, at § 4:1.

86. Am. Paper Inst., Inc. v. Am. Elec. Power Serv. Corp., 461 U.S. 402, 406-08 (1983).

87. FERREY, L. OF INDEP. POWER, *supra* note 78.

88. *See* Ferrey, *supra* note 39, at 540-41.

89. See *id*. at 554-77.

90. Energy Policy Act of 1992, Pub. L. No. 102-486, 106 Stat. 2776 (codified as amended in scattered sections of 15 U.S.C.).

91. FERREY, L. OF INDEP. POWER, *supra* note 78, at § 4:1.

92. *Id*., *see also* Energy Policy Act of 1992, 15 U.S.C. §§ 1914, 1916.

93. *See* Administrative Determination of Full Avoided Costs, 63 Fed. Reg. 51,310, 51,311 (1998).

94. *Id*.

95. Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 5941 (codified as amended in scattered sections of 42 U.S.C.).

facilities.[96] Indexed to inflation, the PTC credit in 2005 was a 1.9-cent credit per kWh produced.[97] The EPAct '05 also modified the Renewable Energy Production Incentive ("REPI").[98]

Various renewable energy incentive programs expired on December 31, 2008.[99] As both parties geared up for the November 2008 election, more emphasis was placed on renewable energy.[100] In particular, Congress debated several bills that could affect the future of energy law in the United States.[101] It is not clear, however, what these bills bring to the table to change the face of energy generation. While these bills contain many energy provisions, they do not appear to be qualitatively different from the dozens of energy initiatives undertaken since the Carter administration.[102]

Still, Congress will eventually act, though its action may not achieve as much as is hoped. The multifaceted approach outlined above describes Congressional attempts over the past few decades to make renewable energy economically viable.

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96. *Id*.

97. Emily Kennedy, Recent Development, *Federal Regulations, Incentives, and Funding of Renewable Energy in 2006*, 1 ENVT'L & ENERGY L. & POL'Y J. 403, 406 (2007).

98. Energy Policy Act of 2005, Pub. L. No. 109-58, §202, 119 Stat. 594 (codified as amended 42 U.S.C. § 13317) (cited in *id.* at 406, n.32).

99. In particular, these include the PTC and Investment Tax Credit. *See* Graham Noyes, *Renewable Energy Industries Look to Busy Congress*, LAW360, Sept. 28, 2008, http://energy.law360.com/articles/70271.

100. *Id*.

101. For example, in early September, 2008, the House passed H.R. 6899, the "Comprehensive American Energy Security and Consumer Protection Act" by a 236-189 vote. *Roll Call*, TULSA WORLD, Sept. 21, 2008, at A9. As of this writing, H.R. 6899 has not yet been debated in the Senate. Avery Palmer, *Decision to Explore for Drilling Sites Off Virginal Coastline Renews Debate*, CONG. Q. TODAY, Nov. 17, 2008, 2008 WL 22346337. In addition, on October 3, 2008, President Bush signed H.R. 1424 into law. David Clarke, *2008 Legislative Summary: Federal Debt Limit Increases*, CONG. Q. TODAY, Dec. 7, 2008, 2008 WL 23969981. H.R. 1424, hailed as an emergency financial assistance bill, spans more than one hundred pages and contains several significant provisions. These include the "Emergency Economic Stabilization Act of 2008" and the "Energy Improvement and Extension Act of 2008." Emergency Economic Stabilization Act of 2008, H.R. 1424, 110th Cong. (2008) (enacted). The energy portions of H.R. 1424 extend investment and production tax credits for a variety of renewable resources. Richard Schwartz et al., *President-Elect Obama's Climate Change and Clean Energy Initiatives: The Risks and Opportunities Posed by the Greening of the American Economy*, MONDAQ, Dec. 23, 2008, 2008 WL 24600166. They also make available favorable tax treatment for brownfield redevelopment and energy-efficient activity. The full impact of this law is not likely to be felt for some time. *See id*.

102. *See* Daniel Van Fleet, *Legal Approaches to Promote Technological Solutions to Climate Change*, 8 DUKE L. & TECH. REV. ¶ 21 (2008).

IV. METHODS TO DEAL WITH THE HIGH COST OF RENEWABLE ENERGY

While many Americans believe that the nation should move toward renewable energy generation,[103] the high capital costs discussed in Part III have, for some time, made that goal simply a pipe dream despite increased Congressional intervention.[104] To facilitate more readily the development of renewable energy sources, state officials around the country have proposed a variety of mechanisms to offset some of the capital costs of renewable energy facilities.[105] Professor Steven Ferrey has written extensively on proposed methods to offset the high capital costs of renewable energy.[106] While much of his work is outside the scope of this paper, he provides a convenient starting point to begin the analysis of state renewable energy proposals.[107]

A. Renewable Resource Portfolio Requirements

Renewable Resource Portfolio Requirements—also known as Renewable Portfolio Standards ("RPS")—require utilities to maintain a certain percentage of clean energy in the wholesale mix of power offered for sale in the state.[108] States like Illinois,[109] California,[110] Pennsylvania,[111] and Colorado[112] have proposed RPS legislation that would require varying levels of renewable energy. By 2007, fifteen states had adopted or amended RPS legislation.[113] Similar proposals have been made on the federal

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103. *See* Victor Skinner, *For Locals, It's Easy Being Green*, THE RECORD-EAGLE (Mich.), Apr. 22, 2008.

104. *See supra* notes 78 - 98 and accompanying text.

105. *See generally* Ferrey, *supra* note 39, at 522-39 (describing renewable trust funds, renewable resource portfolios, sitting reviews, "green electricity pricing, promotional ratemaking policies, emissions trading, emission taxes, and cleancos).

106. *Id*. For a broad overview of many of the proposals to offset high capital costs, see his oft-cited article in the NYU Environmental Law Journal. My analysis here cannot begin to do justice to his proposed models, as many are outside the more limited scope of this paper.

107. *Id*.

108. *Id*. at 529.

109. 20 ILL. COMP. STAT. 687/6–2 to 6–7 (2004).

110. *See, e.g.*, Nancy A. Rader & Richard B. Norgaard, *Efficiency and Sustainability in Restructured Electricity Markets: The Renewable Portfolio Standard*, ELEC. J. 37, 43 (1996) (cited in Ferry, *supra* note 33).

111. *Renewable Energy: Pa. Passes RPS that Includes Waste Coal*, GREENWIRE, Dec. 10, 2004.

112. *Colorado Voters Approve 10% Renewable Portfolio Standard for State's Utilities*, ELECTRIC UTIL. WK., Nov. 8, 2004, at 22.

113. *Report of the Renewable Energy Committee*, 29 ENERGY L.J. 269, 269-73 (2008) [hereinafter *Renewable Energy Committee*]. These are Hawaii (70% by 2030), Colorado (20% from 2020), Connecticut (25% by 2020), Delaware (20% by 2019), Illinois (25% by

level as well, though to date none have been passed.[114]

Many scholars propose a trading scheme as part of a nationwide RPS, similar to the acid rain trading schemes that already exist.[115] The general idea is that, over time, the percentage requirement of renewable sources would increase, though energy companies and utilities could purchase offsets from over-performing companies. As the requirements continue to put additional pressure on utilities, the market itself subsidizes efficient and economical behavior.[116] While it is too early to tell whether RPS trading schemes are effective, the varying level of success by other environmental trading schemes suggests that the idea is worth considering.

Despite early promise, however, it is not clear whether RPS legislation is effective.[117] One author notes "RPS is a policy in search of a rationale, at odds with principles of efficient environmental regulation and poorly suited to promote other policies favored by its supporters. The actual record of state implementations has been largely symbolic."[118] In theory, RPS programs attempt to level the playing field by requiring all utilities in a particular area to operate at the same cost-

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2025), Maine (increase by 10% by 2017), Maryland (two tier program implemented by 2022), Minnesota (25% by 2025), Missouri (voluntary 11% by 2020), North Carolina (12.5% by 2021), New Hampshire (25% by 2025), New Mexico (20% by 2020), Oregon (25% by 2025), and Virginia (12% by 2022). *Id.*

114. *See* Ferrey, *supra* note 33, at 529-30 (referring to H.R. 1828, 106th Cong. § 611 (1999) (as referred to H. Commerce Comm.)); H.R. 6, 108th Cong. (2003); 149 Cong. Rec. H3309 (daily ed. Apr. 11, 2003); 149 Cong. Rec. S15325 (daily ed. Nov. 21, 2003).

115. For information about the acid rain trading schemes, *see generally* Kate M. Joyce, *Issue 2: Who'll Stop the Rain?,* 7 ALB. L. ENVTL. OUTLOOK 94, 101-06 (2002) (discussing the Clean Air Act amendments and their effect on acid rain); Ronald P. Jackson Jr., *Extending the Success of the Acid Rain Provisions of the Clean Air Act: An Analysis of the Clear Skies Initiative and Other Proposed Legislative and Regulatory Schemes to Curb Multi-Pollutant Emissions from Fossil Fueled Electric Generating Plants*, 12 U. BALT. J. ENVTL. L. 91 (2005) (outlining the impact and general success of the acid rain trading scheme).

116. Jackson, *supra* note 115, at 115.

117. *See generally* Robert J. Michaels, *National Renewable Portfolio Standard: Smart Policy or Misguided Gesture?*, 29 ENERGY L.J. 79, 81 (2008) (A national RPS, "will be an inefficient and inequitable environmental policy that reduces emissions at higher cost than necessary and is largely incompatible with existing air quality regulations. . . . [T]he record of state-level RPS compliance and enforcement strongly suggests that the effects of a federal program will be either minimal or perverse. Psychologically and politically satisfying, a national RPS is likely to obstruct the development of efficient policies.")

118. *Id*. at 79. The economic impact of meeting RPS quotas is significant; for utilities to "remain in compliance they must build 12,000 MW [of renewable resource generation capacity] between 2006 and 2010, and 52,000 by 2020, at an estimated cost of $53.4 billion." *Id*. at 83 (citing GLOBAL ENERGY DECISIONS, A DIFFERENT APPROACH: THE BOTTOM LINE ON RENEWABLES 9 (2005)).

disadvantage in obtaining renewable generation capacity.[119] While on the state level this holds potential, two major problems emerge. First, RPS requirements do not make renewable generation less expensive; those requirements simply spread the increased cost over many customers through a stepped-up rate base.[120] Rate base increases can disproportionately affect those individuals least likely to have money to handle energy price increases.[121] Second, national RPS legislation provides differential impacts among states; not all states have access to significant wind generation potential, enjoy the same amount of sunlight each year, have similar opportunities for hydropower, or have access to wave and hydrokinetic energy.[122] Universally applying a one-size-fits-all RPS stamp to utilities located in all states runs the risk of putting some utilities at a significant disadvantage.[123]

B. Siting Reviews of New Generation Capacity

State siting councils conduct siting reviews of newly proposed energy facilities.[124] One proposal suggests having siting councils expand their focus when considering the environmental impact of any proposed plant.[125] In addition to the consideration of traditional environmental impacts such as problems incurred by construction, waste generation, and increased traffic, siting councils could also consider a proposed facility's use of renewable energy sources as one of the environmental factors. This consideration would provide an incentive to develop renewable sources, and it would be "unlikely to have any significant material impact on electricity prices."[126]

Currently, one of the primary issues with building new generation capacity—renewable or otherwise—arises from the not-in-my-back-yard ("NIMBY") phenomenon. Under NIMBY, many people support new generation as long as it is not built close to them.[127] Particularly in more crowded states in the

119. For more information about the potential impacts of RPS legislation in the United States, *see* Andy S. Kydes, *Impacts of a Renewable Portfolio Generation Standard on US Energy Markets*, 35 ENERGY POL'Y 809, 810 (2007).

120. *See id*. at 814.

121. *Cf. id*.

122. *Id*. at 813-14.

123. *Id*. at 814.

124. *See* Ferrey, *supra* note 39, at 532.

125. *Id*.

126. *Id*. at 533.

127. *See* Joshua P. Fershee, *Changing Resources, Changing Market: The Impact of a National Renewable Portfolio Standard on the U.S. Energy Industry*, 29 ENERGY L.J. 49,

eastern half of the country, NIMBY behavior makes it difficult to build new generation facilities. Even wind projects that are offshore[128] or inland[129] cause significant concerns among local communities.

Unfortunately, while expanded siting reviews may increase the use of renewable electricity, they do not directly subsidize the cost or make it easier to cover the capital expenses of construction.[130]

C. Internalize Externalities

One way to encourage renewable resource generation is to level the economic playing field by forcing utilities to internalize their negative externalities. Briefly, the idea follows the "tragedy of the commons" approach: resources that are readily accessible and seemingly limitless become overused, even if the direct social cost is not immediately discernible.[131] The traditional regulatory

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77 (2008).

128. Energy Bar Presentation, *EBA Climate Change Primer: Financing a Renewable Project*, 29 ENERGY L.J. 195, 197 (2008) ("Aesthetically, [wind is] not a very attractive thing. You've got Kennedys up in with their whole focus on fighting whether or not they shouldn't get the wind farms up in the Rhode Island area.").

129. *See, e.g.*, Burch v. Nedpower Mount Storm, LLC 647 S.E.2d 879 (W. Va. 2007) (cited and discussed in *Renewable Energy Committee*, *supra* note 113, at 276). In New York, these disputes continue to flare up as utilities attempt to meet renewable standards. Max R. Mitchell, *Town Passes Wind Law*, WATERTOWN DAILY TIMES, Oct. 28, 2008 at B2. (Concerned about the loss of area birds, one resident said, "Whenever I hear the geese they sound so good, and every time I hear them now I think how they're gonna be gone."); Carol Thompson, *Wind Turbines Continue to Surface*, THE VALLEY NEWS (Fulton, N.Y. Area & Oswego County), Oct. 29, 2008 (evaluating the impact of the wind energy debate on the State's legislative race).

130. Expanded siting reviews could have an indirect cost effect. By requiring all proposed facilities to meet minimum renewable portfolio standards, similar to the RPS schemes, expanded siting reviews may level the playing field. Rather than pushing the development of generation sources that solely utilized renewable energy generation, siting reviews could require *all* new sources to meet minimum levels of renewable energy. This would remove some of the price-competitive pressures faced by new renewable energy facilities.

131. Karl S. Coplan, *The Intercivilizational Inequities of Nuclear Power Weighed Against the Intergenerational Inequities of Carbon Based Energy*, 17 FORDHAM ENVTL. L. REV. 227, 228-29 (2006):

> ("In the paradigmatic 'Tragedy of the Commons,' it is the free market for wool and mutton that lead unrestrained sheepherders to overgraze the common fields in order to increase their short term profits, at the cost of destruction of the very resource necessary for their livelihood. The environmental 'cost' of damage to the grazing field is considered an "externality," as the shepherds do not pay for use of the field, and thus have no market incentives to reduce that use. Unfortunately, the global carbon-based energy economy is a frightening example of the tragedy of the commons, as energy producers rapidly consume an essential global resource, the carbon absorbing capacity of the global ecosystem, without having to pay for it.")

approach is to regulate the externalities and impose the costs upon their producer.[132] Even though in general no particular emission source harms a particular individual, society as a whole bears a collective burden for these negative externalities that show up as reduced IQ, low birth weights, increased asthma, increased allergies, and other similar social costs borne by the public.[133] In this situation, we see that through regulatory policies that require utilities to install expensive pollution control devices to control emissions, utilities bear more or less the "true burden" of the social costs they impose.[134] As these costs are then passed back to society through increased rate base, the basic idea is that consumers then feel the true cost of their energy demands.[135]

Many scholars have pointed out that increasing greenhouse gas ("GHG") emissions such as carbon dioxide ("CO_2") impose worldwide externalities that are not currently accounted for under the Clean Air Act or other federal programs.[136] One solution is to force fossil fuel utilities to internalize these costs, akin to what nitrous oxide ("NOx") and sulfur dioxide ("SO_2") cap-and-trade programs have attempted to do.[137] Because renewable generation sources tend to have lower emissions, increasing the cost of emissions would make these renewable sources more cost-competitive.[138] The practical difficulty with this approach,

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132. *Id*. at 229.

133. *See, e.g.*, Erik Claudio, Comment, *How the EPA May be Selling General Electric Down the River: A Law and Economics Analysis of the $460 Million Hudson River Clean Up Plan,* 13 FORDHAM ENVTL. L.J. 409, 411-12 (2002) (noting that pollutants such as PCBs can cause significant birth defects because of their potential to "trickle up" the food chain). One recent report considered the externalities imposed by Chinese coal plants on the Chinese public and found that the externalities accounted for more than seven percent of GDP. Agence France-Presse, *China's Hidden Coal Cost Equal to 7% of GDP*, INDUSTRY WK. (Oct. 28, 2008), *available at* http://www.industryweek.com./ReadArticle.aspx?ArticleID=17633&SectionID=25 ("[T]he external and unaccounted costs to China of using coal included air and water pollution, ecosystem degradation, damage to infrastructure, human injuries and loss of life. [The report] also takes into account the distortion of government regulations which keep the cost of coal down such as distorted land ownership policies, and inadequate worker safety and worker compensation systems.").

134. *See* Claudio, *supra* note 133, at 422-24.

135. *Id*.

136. Adam L. Aronson, Note, *From "Cooperator's Loss" to Cooperative Gain: Negotiating Greenhouse Gas Abatement*, 102 YALE L.J. 2143, 2143-45 (1993) ("[T]he international community has failed to negotiate a specific agreement limiting GHG emissions because some nations have more to lose than to gain from an international abatement regime, though the benefit to the world from their participation in such a regime may exceed the costs.").

137. *See* Eric Posner & Cass K. Sunstein, *Should Greenhouse Gas Permits Be Allocated on a Per Capita Basis*, 97 CAL L. REV. 51, 76 (2009).

138. David Harrison et al., *Using Emissions Trading to Combat Climate Change:*

however, is that no one is entirely sure how to value the increased emissions. Attempts to model costs result in widely varying conclusions. As such, it is difficult to find ways to internalize these externalities in a fair, market-based way that provides structure for utilities. This systemic lack of certainty renders such a model almost unworkable as a pure economic exercise. Clearly, state or federal regulation of greenhouse gases would add a cost to the use of fossil fuels for power generation, even if the precise costs are difficult to estimate.

D. "Green" Pricing / Ratemaking

Ferrey notes that states can consider green pricing and ratemaking schemes.[139] Generally, the idea behind green pricing is that some consumers willingly pay a premium to obtain what they perceive to be environmentally friendly products.[140] If energy products can be unbundled and sold by source of energy, this would provide the public with a way to subsidize renewable energy directly.[141]

A similar method is to utilize green ratemaking. In green ratemaking, state public utility boards would set rates based on the long-term marginal costs of using energy from a particular power source.[142] Under this sort of program, energy from fossil fuels would be increased in price to reflect its finite nature.[143] This, of course, would have the direct effect of making renewable energy products more cost-efficient.

The desire of consumers to subsidize particular technologies can be a good way to offset some of the high capital costs of renewable generation. Unfortunately, most of the electricity transmission grid is currently "dumb."[144] Without "smart-grid"

Programs and Key Issues, 38 ENVTL. L. REP. NEWS AND ANALYSIS 10367, 10382 (2008).

139. Ferrey, *supra* note 39, at 533.

140. *See id*. *See also* HGTV, *Survey: Consumers Willing to Pay More for Green Products*, *available at* http://www.hgtvpro.com (Go to the news tab; under the 'More in Industry News' column and click on Trends; go to the fourth page and click on the article) (last visited Feb. 20, 2009) ("A new survey released today shows that nearly seven out of 10 U.S. consumers (65 percent) are willing to pay more for products made with renewable resources."). For similar results replicated in an English study, see FreshPlaza, *UK: Britons pay more for green products*, *available at* http://www.freshplaza.com/news_detail.asp?id=20415 (last visited Feb. 20, 2009) ("Around 40% of people said they would be happy to pay an average of 10% more for goods that were organic, recycled or energy efficient.").

141. Ferrey, *supra* note 39, at 534 (noting, however, that such a system may run into problems because it "relies on individual consumer decisions to create a public good," which could result in the free-rider phenomenon).

142. *Id*.

143. *See id*. at 514.

144. H.R. REP. NO. 95-543, at 47 (1st. Sess. 1977) (indicating one of the original goals

technology, more efficient demand and green-based ratemaking becomes difficult to track. As the transmission system moves more in the direction of smart-grid technology, green pricing is likely to play a significant role in offsetting capital costs.

E. Direct/Tax Subsidies

Another potential approach that states can take is to offer direct or tax-based subsidies to renewable energy facilities.[145] Under the direct subsidy approach, state and local governments would provide direct subsidies, either by offering low-interest loans to energy facility developers or by subsidizing a portion of the capital costs required for startup.[146] Conversely, state and local governments can provide tax subsidies to producers of renewable power. In these situations, various taxes that might affect utilities can be lessened or waived. This tax-advantaged status can offset some of the increased capital costs.

Though subsidies have the advantage of being relatively transparent and easy to administer, the net effect is not as promising. Rather than paying for renewable generation through higher rates, consumers simply pay for renewable generation indirectly through higher taxes. These tax subsidies can face strong pushback from taxpayer advocate groups.

F. Performance Based Ratemaking

Another proposal to offset some of the higher costs of renewable energy is performance-based ratemaking ("PBR"). PBR comes in many forms, but the basic idea behind it is that the state would impose price caps that fix electricity prices.[147] As utilities become more efficient, they *earn* the difference between the fixed prices and their true cost.[148] While there are many PBR schemes, the central theme of those schemes is to provide

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of PURPA, 16 U.S.C. § 2601, was to encourage the development of "smart-grid" technologies). *See* 16 U.S.C. § 2601 (West 1978); Ferrey, *supra* note 39, at 513.

145. *See generally* Hymel, *supra* note 65 (summarizing various fossil fuel and renewable energy tax incentives and their effectiveness).

146. *See* ENERGY INFO. ADMIN., FEDERAL FINANCIAL INTERVENTIONS AND SUBSIDIES IN ENERGY MARKETS 2007 1-4 (2007) (enumerating and summarizing energy subsidies directed to electricity production).

147. *See* BRUCE BIEWALD ET AL., NAT'L ASS'N OF REGULATORY UTIL. COMM'RS, PERFORMANCE-BASED REGULATION IN A RESTRUCTURED ELECTRIC INDUSTRY 2 (1997). For example, PBR schemes utilize price caps, combination revenue-price caps, productivity indices, price floors, price margins, targeted incentives, profit/loss sharing mechanisms, performance standards, and price amortization, among other tools. *Id.*

148. Ferrey, *supra* note 39, at 535-36.

incentives for utilities to economize and come below a price cap.[149] This provides stable rate projections, but creates strong incentives for targeted utility improvement. Such a program would provide long-term price stability for renewable energy facilities, while at the same time providing them with an incentive to find ways to lower costs.[150] PBR policies provide utilities with a stable rate base—so the utilities have the certainty required for long-term planning—but also include efficiency incentives to increase the equity return for stakeholders.[151]

While on the surface this sounds like a good idea, the long-term price stability may not go far enough to offset capital costs.[152] If a utility were able to become significantly more efficient, it could do well under a PBR program. But with little information about the viability of significantly lowering renewable energy generation costs, this might be too much of a gamble for public utilities. Moreover, PBR programs can create service degradation concerns; PBR rewards utilities that cut costs and not necessarily utilities that increase the quality of service. Thus, while PBR programs can provide some degree of long-term certainty for renewable generation projects, they may not offset all the capital costs and may result in service degradation.

The high startup cost of renewable energy facilities puts them at a competitive disadvantage in the marketplace.[153] Because of this disadvantage, entrepreneurs hesitate to lock up capital into long-term, high-risk, and low-reward renewable facilities.[154] To incentivize renewable energy generation capacity, states have begun to examine different methods of subsidizing the high capital costs. These include RPS requirements, expanded siting reviews, green pricing or ratemaking, internalizing negative externalities, direct and tax subsidies, and performance based ratemaking policies.

These proposals may hold some promise. That does not mean, however, that they are without flaws. Certain aspects of constitutional law create significant hurdles for state governments that attempt to incentivize renewable energy

149. *Id*. at 535.

150. *Id*.

151. *Id*.

152. *See id*. at 634.

153. *See* Ferrey, *supra* note 39, at 634.

154. Richard R. Bradley, *One Step in the Right Direction: An Analysis of FERC's Reporting Requirement for Status Changes for Public Utilities with Market-Based Rate Authority*, 1 ENVTL. & ENERGY L. & POL'Y. J. 373, 373 n.10 (2007).

generation. Part V examines potential Dormant Commerce Clause issues latent within the subsidy proposals.

V. THE DORMANT COMMERCE CLAUSE

A. Introduction

Under the U.S. Constitution, Congress alone has the power to regulate commerce "among the several states."[155] This power over interstate commerce does not only extend to positive law enacted by Congress;[156] rather, state and local governments cannot pass laws that place an undue burden on interstate commerce.[157] "Even if Congress has not acted, even if its commerce power lies dormant, state and local governments cannot place an undue burden on interstate commerce."[158] In areas where Congress has not regulated, however, the Constitution grants to the states the ability to regulate incidents of interstate commerce "so long as they act within the restraints imposed by the Commerce Clause itself."[159] The tough question is where these boundaries are drawn, and to what extent the limits are imposed by the Commerce Clause.[160]

B. Background of the Dormant Commerce Clause

The theory behind the Dormant Commerce Clause first appeared in Federalist No. 6, "Concerning Dangers From Dissensions Between the States."[161] Federalist No. 6 noted "the

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155. U.S. Const. art. I, § 8, cl. 3.

156. ERWIN CHEMERINSKY, CONSTITUTIONAL LAW: PRINCIPLES & PROCEDURES 419 (Aspen 2006).

157. *Id*.

158. *Id*. *See generally* Christine A. Klein, *The Environmental Commerce Clause*, 27 HARV. ENVTL. L. REV. 1, 2-3 (2003) (stating Dormant Commerce Clause issues limit environmental remedies available to states); Julian N. Eule, *Laying the Dormant Commerce Clause to Rest*, 91 YALE L.J. 425, 430-35 (1982) (outlining the history of Dormant Commerce Clause analysis and its protectionist impacts).

159. Philadelphia v. New Jersey, 437 U.S. 617, 623 (1978). *See also* Maine v. Taylor, 477 U.S. 131, 138-39 (1986) (discussing the nuances of Dormant Commerce Clause analysis).

160. *See* Shane Ramsey, *Power Plant Siting in a Deregulated Electric Energy Industry: Discerning the Constitutionality of Siting Statutes under the Dormant Commerce Clause*, 21 J. LAND USE & ENVTL. L. 91, 97-98 (2005) ("While the bounds of these [Dormant Commerce Clause] restraints do not appear in the language of the Commerce Clause, the Court has given effect to such restraints based on the basic principle of the Commerce Clause. . . . [The] basic principle of the Commerce Clause is that the nation is one economic unit and that one state in its dealings with another may not place itself in a position of economic isolation.") (internal citations omitted).

161. THE FEDERALIST NO. 6 (Alexander Hamilton).

spirit of commerce has a tendency to soften the manners of men, and to extinguish those inflammable humors which have so often kindled into wars . . . [h]ave there not been as many wars founded upon commercial motives . . . ."[162] The Framers saw open access to commerce as essential to national unity.

The United States Supreme Court addressed the Dormant Commerce Clause in *Gibbons v. Ogden*, a case in which the State of New York attempted to grant exclusive monopolies to steamboat operators in New York waters.[163] This grant would prevent other steamboat operators—who had federal but not New York permits—from operating in New York waters.[164] In *Gibbons*, Chief Justice Marshall ruled against New York and clarified that, as a general rule, state regulation of commerce interferes with the Congressional mandate under the Commerce Clause. Under this approach, Marshall drew a distinction between valid exercises of state police power[165] and state actions that interfere with interstate commerce by creating an undue burden.[166]

This approach, while on its face valid, created more problems. In theory, Chief Justice Marshall distinguished police power from interference with commerce. In practice, however, this boundary was far from clear. Many actions that might fall under the umbrella of state police power might still create a significantly disparate impact under a Commerce Clause analysis.[167]

C. Modern Interpretations of the Dormant Commerce Clause

From its inauspicious beginning, Dormant Commerce Clause analysis has blossomed into a mature field. With the maturation process, however, the old categories outlined in previous tests became less structured. Throughout most of the 20th century, the Court has focused on an amorphous balancing test.[168] This balancing test weighs the potential benefits of a law against the

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162. *Id*., *e.g.*, Andrew D. Thompson, *Public Health, Environmental Protection, and the Dormant Commerce Clause: Maintaining State Sovereignty in the Federalist Structure*, 55 CASE W. RES. L. REV. 213, 221-22 (2004).

163. Gibbons v. Ogden, 22 U.S. 1 (1824).

164. *Gibbons*, 22 U.S. at 2.

165. *Id*. (using state inspection laws as an example).

166. *Id*. at 2.

167. *See also* CHEMERINSKY, *supra* note 156, at 424-28 (outlining three different tests: the police power/commerce power test of *Gibbons*, the local/national subject matter test of *Cooley v. Board of Wardens*, 53 U.S. 299 (1851), and direct/indirect test of *DiSanto v. Pennsylvania*, 273 U.S. 34 (1927)).

168. *Id*. at 429.

burdens that it creates for interstate commerce.[169] The Dormant Commerce Clause today regulates two major categories of activity: (1) where the statute discriminates against out-of-state interests,[170] and (2) where the statute "regulates even-handedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental."[171] This section will analyze both types of statutes in turn.

i. Discriminatory Statutes

The first part of the Dormant Commerce Clause analysis is composed of statutes that discriminate against out-of-state interests.[172] This section is further broken down into two subsections: (1) situations where the statutes are facially discriminatory,[173] and (2) statutes that are not facially discriminatory, but nonetheless discriminate against interstate commerce.[174] The Court in *Philadelphia v. New Jersey* outlined the basic impact of the *per se* invalid test.

The opinions of the Court through the years have reflected an alertness to the evils of "economic isolationism" and protectionism, while at the same time recognizing that incidental burdens on interstate commerce may be unavoidable when a State legislates to safeguard the health and safety of its people. Thus, where simple economic protectionism is effected by state legislation, a virtually *per se* rule of invalidity has been erected.[175]

Under modern Dormant Commerce Clause analysis, discriminatory statutes are subject to "strict scrutiny."[176] For such a statute to be valid, the state must demonstrate that the

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169. *Id*.

170. *See, e.g.*, Thompson, *supra* note 162, at 223. That is, the statutes that are almost always *per se* invalid.

171. Pike v. Bruce Church, 397 U.S. 137, 142 (1970) (referred to as the *Pike* balancing test).

172. Ramsey, *supra* note 160, at 98.

173. *See, e.g.*, *Philadelphia*, 437 U.S. 617 ("The New Jersey law blocks the importation of waste in an obvious effort to saddle those outside the State with the entire burden of slowing the flow of refuse into New Jersey's remaining landfill sites. That legislative effort is clearly impermissible under the Commerce Clause of the Constitution").

174. *See, e.g.*, Hunt v. Wash. State Apple Adver. Comm'n., 432 U.S. 333 (1977). (holding that a North Carolina statute violated commerce clause insofar as it prohibited the display of Washington State grades even if enacted for the declared purpose of protecting consumers from deception and fraud in the market place).

175. *Philadelphia,* 437 U.S. at 623-24 (cited in Thompson, *supra* note 162, at 223).

176. Matthew Visick, *If Not Now, When? The California Global Warming Solutions Act of 2006: California's Final Steps Toward Comprehensive Mandatory Greenhouse Gas Regulation*, 13 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 249, 270 (2007) (citing *Philadelphia,*, 437 U.S. at 624, that "[i]f a statute is facially discriminatory, then it is virtually per se invalid.").

statute exists for a compelling state interest, and that the statute is the least-intrusive means of achieving that state interest.[177] That is, "[w]hen a court employs the '*per se* invalid' test it will invalidate the state regulation of interstate commerce unless the state can point to a legitimate local interest promoted by the regulation and the absence of other, non-discriminatory means."[178]

The strict scrutiny standard is a difficult hurdle to overcome; most statutes reviewed under strict scrutiny are declared unconstitutional. Accordingly, any renewable energy proposal that seeks to avoid interference with the Dormant Commerce Clause must not be facially discriminatory. The practical result of this high standard is that states have limited means by which to pursue policies to offset capital costs of renewable energy generation.

ii. Even-handed Statutes

The second part of the Dormant Commerce Clause analysis is composed of statutes where the state operates for a legitimate local public interest, with only limited effects on interstate commerce.[179] These cases are governed by the test outlined in *Pike v. Bruce Church*, which weighed the "magnitude of the burden on interstate commerce against the state interest achieved by the statute."[180] This is a lower standard of review than strict scrutiny, yet it is somewhat more stringent than simple rational basis review. The *Pike* test notes that a state statute that "regulates even-handedly to effectuate a legitimate local public interest" and that has only incidental effects on interstate commerce will be upheld "unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits."[181]

Though there is no definitive line by which courts analyze cases under the Dormant Commerce Clause,[182] there is some weighing of the burdens placed on interstate commerce, the potential protectionist intention behind those burdens, and the benefits derived by the legislation.[183] Courts uphold state

177. *Id*.

178. Thompson, *supra* note 162, at 223.

179. *Pike*, 397 U.S. at 142.

180. Ramsey, *supra* note 160, at 99.

181. Nathan E. Endrud, *State Renewable Portfolio Standards: Their Continued Validity and Relevance in Light of the Dormant Commerce Clause, the Supremacy Clause, and Possible Federal Legislation*, 45 HARV. J. ON LEGIS. 259, 266 (2008).

182. *Id*.

183. *See, e.g.*, Alliance for Clean Coal v. Miller, 44 F.3d 591 (7th Cir. 1995), *discussed*

statutes that are non-discriminatory as long as the state interest outweighs the incidental impacts on interstate commerce.

D. Application of the Dormant Commerce Clause to Renewable Energy Incentive Programs

After outlining current Dormant Commerce Clause doctrine, this paper now turns to evaluating a representative subset of the previously suggested solutions in light of the Dormant Commerce Clause: siting review, direct and tax subsidies, and RPS requirements.

i. Siting Review

As mentioned previously, experts have proposed state siting statutes as one way to encourage renewable energy production.[184] Under the siting statutes, states have the opportunity to block a generation expansion effort.[185] When state siting committees review the proposals to determine whether to allow power plant expansion, they focus on largely in-state benefits.[186] "Thus, in most states, power plants will not be sited unless they provide a significant in-state benefit, no matter how large a benefit the proposed plant may provide on a regional basis."[187]

Obviously, this deferential treatment of in-state interests vis-à-vis out of state interests triggers certain Dormant Commerce Clause challenges. In particular, siting reviews may include provisions that require the state where the plant is

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in Endrud, *supra* note 182. In *Miller*, the Seventh Circuit struck down Illinois' 1991 Coal Act, 220 Ill. Comp. Stat. Ann. 5/8-402.1 (1993), because it failed to pass Dormant Commerce Clause analysis. *Id*. at 596-97. The Coal Act contained provisions that required state regulators to consider the impact on the local coal industry when determining permitting requirements under the Clean Air Act. *Id.* at 593. The court found that these provisions were protectionist measures intended to favor in-state interests at the expense of out-of-state interests. *Id.* at 596-97. Accordingly, the court struck down the legislation as unconstitutional under the Dormant Commerce Clause. *Id*. Thus, while it is clear that courts will give some weight to local interests that only incidentally affect interstate commerce, state legislation that explicitly favors in-state interests to the detriment of out-of-state interests cannot be upheld under the Commerce Clause. *Id*.

184. *See supra*, Part IV. § B.

185. In addition, local governments in twenty-two states can block the expansion. Richard J. Pierce, *Environmental Regulation, Energy, and Market Entry*, 15 DUKE ENVTL. L. & POL'Y F. 167, 178 (2005). *See generally* Elise N. Zioli, *Power Plant Siting in a Restructured World: Is There a Light at the End of the Tunnel?*, 16 NAT. RESOURCES & ENV'T 252, 252-53 (2002) (highlighting the problems faced by utilities that attempt to build new power plants).

186. *See* Ashley C. Brown & Damon Daniles, *Vision Without Site: Site Without Vision* 4 (2003) (on file with Journal), *cited in* Ramsey, *supra* note 160, at 92.

187. Ramsey, *supra* note 161, at 92.

located to have some sort of priority to energy distributions.[188] The Supreme Court has dealt with this problem in other areas of public utility law. For example, in *New England Power Co. v. New Hampshire*, a New Hampshire statute required New Hampshire utilities to obtain permission from the New Hampshire Public Utilities Commission before transporting any energy out-of-state.[189] The Court struck down this statute and held that it constituted facial discrimination and unduly burdened interstate commerce.[190] A court is likely to find any siting review that disproportionately favors local economic interests at the expense of out-of-state interests—particularly with regard to the exportation of power generated in-state—unconstitutional.

ii. Direct and Tax Subsidies

To offset the high capital costs of renewable energy generation, states have considered offering direct and/or tax subsidies. These subsidies take many different forms: tax credits or exemptions for local businesses, state-sponsored loans at low cost, direct monetary subsidies, and favorable leases on public property, among others.[191] Before *West Lynn Creamery*, it appeared that states could use direct subsidies as a way to offer incentives to in-state industry, even if this had an indirect affect of discriminating against out-of-state industries.[192]

West Lynn Creamery, however, changed that analysis. In *West Lynn Creamery*, Massachusetts:

> issued an emergency order that required every milk dealer in the state to make a monthly "premium payment" into a "Dairy Equalization Fund." . . . [T]he proceeds of the equalization fund were distributed solely

188. *Id*. at 105-07.

189. New England Power Co. v. New Hampshire, 455 U.S. 331, 335 (1982).

190. *Id*. at 338.

191. Dan T. Coenen, *Business Subsidies and the Dormant Commerce Clause*, 107 YALE. L.J. 965, 967-68 (1998). Until 1994, the Court appeared to view direct monetary subsidies as outside the purview of the Dormant Commerce Clause. The Court's decision in *West Lynn Creamery, Inc. v. Healy*, 512 U.S. 186 (1994), however, seemed to suggest a departure from this position. *See* William L. Oemichen, *Milk, State Taxes, State Subsidies, and the Commerce Clause: When States Cannot Tax an Agricultural Commodity To Fund a Subsidy for Its Struggling Industries*, *West Lynn Creamery, Inc. v. Healy, 114 S. Ct. 2205, (1994)*, 18 HAMLINE L. REV. 415, 428 (1995) (stating that West Lynn Creamery "places in constitutional jeopardy the ability of states to subsidize domestic industries"); Christopher P. La Puma, Note, *Massachusetts Tax and Subsidy Scheme Violates Commerce Clause: West Lynn Creamery, Inc. v. Healy*, 48 TAX LAW. 641, 653 (1995) (concluding that West Lynn Creamery "has inadvertently cast doubt on the validity of subsidies themselves"), *cited in* Coenen, *supra* note 192, at 968.

192. *See* W. Lynn Creamery, Inc. v. Healy, 512 U.S. 186 (1994).

> to Massachusetts producers. The Court ruled that, although the order consisted of two provisions—a nondiscriminatory tax and a state subsidy—that would separately pass constitutional muster, the combination of the two had the discriminatory effect of a tariff and therefore violated the dormant Commerce Clause.[193]

Prior to 1994, direct subsidies might have been a way to provide incentives to in-state producers, even if those incentives unfairly discriminated against out-of-state companies. After *West Lynn Creamery*, however, that analysis no longer stands. States must tread carefully when considering the possibility of discriminatory tax and direct subsidies.[194]

iii. Renewable Portfolio Standards Requirements

As previously discussed, RPS requirements may provide an incentive for renewable energy development.[195] An RPS "requires all retail utilities in a given state to prove that a set percentage of its total commercially available supply is derived from renewable energy resources."[196] On their surface, RPS provisions appear to pass the constitutional hurdles posed by the Dormant Commerce Clause.[197] An essential part of this analysis, however, is that the RPS provisions must not appear to discriminate against out-of-state renewable energy facilities based on location. The location of the facility or the source of the renewable energy must be irrelevant to the energy requirement.[198]

Any requirement that the energy used to meet the RPS threshold must be generated within the state itself would almost certainly be found to violate the Dormant Commerce Clause.[199] Because such provisions "are easily severable, as opposed to being integrated components essential for realizing the environmental benefits of RPS programs, in-state location requirements would almost certainly be struck down as provisions serving no purpose other than economic

193. Endrud, *supra* note 181, at 267 (citations omitted).

194. *See generally* Richard B. Collins, *Economic Union as a Constitutional Value*, 63 N.Y.U. L. REV. 43, 102 (1988) ("Subsidies do not distort local politics nearly as effectively as do protectionist regulations . . . Subsidy costs are directly borne internally."), *quoted in* Erin F. Delaney, Note, *In the Shadow of Article I: Applying a Dormant Commerce Clause Analysis to State Laws Regulating Aliens*, 82 N.Y.U. L. REV. 1821, 1845 & n.130 (2007).

195. *See supra*, Part IV. § A.

196. Jacobi, *supra* note 38, at 1081.

197. *See id*. at 1082. *See also* Endrud, *supra* note 181, at 272.

198. Jacobi, *supra* note 38, at 1082.

199. Endrud, *supra* note 181, at 270.

protectionism."[200]

The way for RPS programs to pass constitutional muster is for state legislatures to construct the programs to track in-state consumption, without regard to the location of generation. This permits out-of-state generators to transmit renewable energy generated elsewhere to the state and still meet RPS requirements. While the practical effect is the same—increasing the supply of renewable energy in the state—doing so in this way avoids the facially discriminatory result that would cause a court to apply strict scrutiny.[201]

VI. POTENTIAL SOLUTIONS

Clearly, the Dormant Commerce Clause—particularly after *West Lynn Creamery*—limits states' flexibility to create paradigms that offset the high capital cost of introducing new renewable energy facilities.[202] Despite the hurdles posed by the Dormant Commerce Clause, states still have some options.

First, states can pursue limited pseudo-protectionist measures utilizing RPS schemes and still fit within the confines of the Dormant Commerce Clause. Second, states, in conjunction with local authorities, can utilize their permitting approval under the state police powers to encourage the placement and construction of renewable energy facilities within the state. Third, the federal government can create a national structure by which states can perform limited and short-term protectionist measures to encourage renewable energy production. Fourth, because of the unbundling effects of deregulation, utilities can market renewable energy directly to consumers, who might pay a premium. This would offset some of the high capital cost.

A. RPS Schemes

By aggressive use of RPS provisions, states can mandate that utilities generate certain amounts of electricity in the state from renewable sources. As mentioned previously, state legislatures must tread carefully and make sure not to include any generation-location requirements. By focusing on in-state benefits rather than out-of-state generation, RPS provisions may prove to be one of the most efficient ways to increase the amount of renewable energy in a state.

Unfortunately, while RPS provisions require utilities to

200. *Id*. at 271.

201. *Id*.

202. *See supra* Part V. § D.

provide a certain mix of renewables in their energy portfolio, those provisions typically do not provide a way to offset capital costs. That is, state-specific RPS programs may put in-state utilities at a significant disadvantage. With the rise of electricity wholesale approved by the Federal Energy Regulatory Commission ("FERC") in-state generation sources that are at a competitive disadvantage to out-of-state sources, which do not have to meet RPS requirements, may not be able to stay in business. Ultimately, if done on a patchwork state-by-state basis, RPS requirements may end up passing the costs on to consumers. While state-specific RPS programs may pass constitutional muster under the Dormant Commerce Clause, they may not be a cost-effective means to increase renewable energy generation. However, RPS programs may be the most efficient at forcing compliance and implementing renewables, even if they have the drawback of not reducing capital costs.

B. Fast-Tracked Permitting Approval

A significant portion of the cost of developing a power plant is going through all of the stages of the permitting process. State governments can work alongside local governments to fast-track facilities that utilize certain levels of renewable sources for energy generation. States have used similar fast-track approaches with success in the affordable housing market.[203] It stands to reason that cutting through the permitting red tape offers low-cost benefits and incentives for companies that embrace green technology. Perhaps the strongest point in favor of fast-tracked permitting approval is that there are no upfront costs to consumers; eliminating red tape provides capital-offsetting opportunities for utilities moving in the direction of renewable generation without a concomitant price increase for consumers.[204]

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203. *See* MASS. GEN. LAWS ch. 40B, §§ 20-23 (2004). *See also* Christopher Baker, Note, *Housing in Crisis—A Call to Reform Massachusetts's Affordable Housing Law*, 32 B.C. ENVTL. AFF. L. REV. 165, 170-71 (2005) (stating an expedited permitting process for affordable housing developments enables developers to cut costs and more quickly develop).

204. While fast-tracked permitting approval appears to provide incentives without significant consumer costs, some environmental advocate groups disagree. California, through Proposition 7, has attempted to implement fast-tracked siting review, but this attempt has faced opposition from some environmental groups. CRAIG NOBLE, NATURAL RES. DEF. COUNCIL, *California's Prop 7 Is Bad for Renewable Energy*, CAL. PROGRESS REP., Oct. 18, 2008, http://www.californiaprogressreport.com/2008/10/californias_pro.html ("Prop 7 would limit environmental review of renewable energy projects. The siting of renewable energy and transmission projects should be an open, transparent process with ample opportunity for review and comment by concerned citizens, regulatory agencies,

C. Short-Term Federal Intervention

Congress has the ability to preempt the Dormant Commerce Clause by directly regulating a particular area of commerce.[205] If Congress stepped in to create national standards of renewable energy generation, this would circumvent state efforts and provide states with the opportunity to augment the national energy standards. Such federal intervention would remove all concerns with the Dormant Commerce Clause.

These measures should be short-term, however. State protectionist measures in any form can be detrimental to the long-term health of the national economy. In this instance, proponents could argue that they are justified in the short-term solely because of the looming specter of the energy crisis. It is not clear, however, whether federal intervention in the renewable energy sector would cause more good than harm. As mentioned previously, Congress has passed a plethora of legislation intended to spur on renewable energy development,[206] yet this morass of legislation has resulted in a tangled web of temporary incentives and counter-productive measures, rather than a cogent, national renewable energy scheme.

While federal intervention may provide the best long-term method to address renewable concerns without implicating the Dormant Commerce Clause, federal legislators must tread carefully. Passing complicated and obtuse energy legislation may be a way to do something popular and garner approval from the electorate, but unless well-written, this sort of legislation may not provide industry the certainty and clarity it needs to expand renewable generation. If Washington could generate clear, concise, and workable legislation to remedy the capital cost dilemma, this approach could be the most effective long-term.

D. Green Marketing

Finally, the deregulation movement has resulted in the unbundling of generation and transmission. Further unbundling of the market may enable utilities to market renewable energy directly to the consumers. As mentioned earlier, many consumers place a premium on renewable energy and would be

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and federal, state and local governments. . . . The pro-renewable energy vote this November is an emphatic No on Proposition 7.") (last visited Mar. 28, 2009).

205. That is, by directly speaking to an issue, Congress has the ability to bring subject matter within the realm of the positive Commerce Clause, rather than leaving provisions to the requirements of the Dormant Commerce Clause.

206. *See supra* note 78 and accompanying text.

willing to subsidize it directly.[207] This may be the most workable solution because as consumer awareness of the benefits of renewable energy increases, more and more consumers will be willing to pay a premium for that energy. Moreover, this solution cuts through all Dormant Commerce Clause concerns. It also appeals to free-market proponents by limiting governmental intervention and putting the decision-making power into the hands of individuals, rather than the state or local government. While this approach lacks the top-down nature of other proposals, it may be the easiest to implement, especially if coupled with an extensive consumer awareness program to inform the public of the negative externalities imposed by using non-renewable energy sources.

VII. CONCLUSION

As nations around the globe expand and modernize, they require seemingly endless supplies of energy. Over the past few decades, many people have begun to realize that fossil fuels are not the solution; their finite nature renders them non-viable candidates to be the fuel of the future. In light of this, governments have sought to increase the development of renewable energy. Unfortunately, the high startup cost of renewable energy development makes it difficult to afford. Accordingly, states have searched for mechanisms to subsidize renewable energy generators. Many of these mechanisms, however, conflict with the Dormant Commerce Clause, which limits states' ability to discriminate against out-of-state interests.

But hope still exists for renewable energy proponents. State RPS programs may level the playing field for renewable energy generators. Fast-tracked permitting processes may remove some of the bureaucratic hurdles to facility expansion. Congress itself could step into the field by increasing renewable energy mandates. Finally, with the increased unbundling of energy products, utilities themselves could appeal directly to the consumers. As consumer awareness of the energy crisis increases, consumers will become more willing to subsidize personally the costs of renewable resources.

Each of these solutions faces potential problems. These problems, however, are not insurmountable. While none of these solutions alone permanently solves the energy problem, all of them taken together may provide a path toward national energy independence and environmental security.

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207. *See supra* note 141 and accompanying text.