

Recharging U.S. Energy Policy: Advocating for a National Renewable Portfolio Standard

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ABSTRACT

The global economy depends on uninterrupted electricity, but electricity generators pollute more than any other industry. The United States has regulated electricity almost from its beginning. Yet, despite repeated proposals, including the Energy Policy Act of 2005, Congress has yet to pass a renewable portfolio standard (RPS). Renewable portfolio standards require an electricity market to include a minimum percentage of electricity generated from renewable sources such as solar, wind, biomass, and geothermal sources. RPS policies use market-trading mechanisms to ensure that the required renewable energy is generated in the most efficient manner possible.

Twenty-six U.S. states, Australia, and the European Union (E.U.) have implemented renewable portfolio standards or similar laws. These policies aim to reduce reliance on fossil fuels, decrease pollutants and greenhouse gas emissions, and foster technological innovation and economic growth. An analysis of these policies suggests how the United States might shape a national renewable policy.

This paper intends to provide an overview of the electricity landscape in the United States and advocates for a national RPS. The paper explores the history and sources of electricity. It then explains renewable portfolio standards, with an in-depth look into renewable energy credit trading programs, a key policy mechanism that maximizes efficiency in meeting the increased demand for renewable energy generation. Finally, the paper ex-

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plores lessons that the United States can learn from the renewable policies in Texas, Australia, and the E.U.

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I.

INTRODUCTION

The global boom in renewable energy has been compared to the industrial revolution in its promise to transform the globe.¹ In the face of international and statewide policies to promote renewable energy, the United States has failed to adopt a renewable portfolio standard, a powerful policy tool that requires a certain amount of electricity to come from renewable sources. Considering how much Americans depend on electricity, it is time that the nation infuses the energy supply with a significant percentage of renewably-generated electricity.

On a given day I wake up to an alarm clock, flip on the bathroom light, take a hot shower, heat water on the stove for oatmeal and herbal tea, listen to the radio, blow dry my hair, check my email, type notes on my laptop, text message with my cell phone, read the news online, microwave my lunch, listen to my iPod, work some more on my computer, cook dinner, and at the end of the day turn off the lights and set that alarm clock to start over again the next day. All of these things take electricity, not to mention the vacuum, washing machine, clothes dryer, dishwasher, iron, thermostat, air conditioner, or the electricity that went into building my house, manufacturing my water bottle, sewing my clothes, and creating the carpet.

Even though I rely on electricity, I generally do not think about its source. Most Americans no longer light candles as their sole source of light or burn wood as a primary source of heat. We plug things into outlets and flip switches. American power is supplied by electricity-generating plants that are far-removed from most citizens' immediate environment and daily awareness. One thing is certain: the majority of America's electricity comes from burning fossil fuels.²

According to Environmental Protection Agency (EPA) data, electric utilities pollute more than any other industry in the United States.³ Coal fired plants emit pollution (sulfur dioxide)

1. Telephone Interview with Zachary Lyman, Steering Committee Member, American Council on Renewable Energy and Managing Partner, Reluminati in Washington, D.C. (March 27, 2007).

2. Energy Info. Admin., *Monthly Energy Review Electricity Net Generation: Electric Power Sector Table 7.2b* (Dec. 2006), available at <http://www.eia.doe.gov/emeu/cabs/Usa/Electricity.html>, hereinafter *Energy Review*. See *infra* Part I for specific statistics.

3. Sydney A. Shapiro & Joseph P. Tomain, *Rethinking Reform of Electricity Markets*, 40 WAKE FOREST L. REV. 497, 499-500 (2005), citing a report that compiles the

that leads to acid rain as well as particulates, mercury, and other substances harmful to human health.⁴ Fossil fuel-burning electricity generators also produce carbon dioxide and nitrous oxide, two of the primary green house gases (GHGs) that contribute to global warming.⁵ Climate change has been described as “perhaps one of the most daunting of the global threats currently facing mankind.”⁶

Although climate change is scientifically certain,⁷ it remains politicized. It makes sense ecologically, economically, and for national security to create policies that promote the development of new renewable energy sources. Many countries,⁸ including Australia and the European Union, as well as many states within the United States, have adopted policies to promote renewable energy and support renewable electricity’s growth. By contrast, the United States Congress failed to include a renewable energy portfolio standard (RPS) in the Energy Policy Act of 2005.

I advocate for a federal policy that engages the United States in support for renewable energy through a national RPS. A na-

EPA data on toxic air emissions in Clear the Air: The Nat’l Campaign Against Dirty Power, Toxic Power: What the Toxics Release Inventory Tells Us About Power Plant Pollution 1 (2000), available at http://www.cleartheair.org/tri/complete_report.pdf.

4. David B. Spence, *Coal-Fired Power in a restructured Electricity Market*, 15 DUKE ENVTL. L. POL’Y F. 187, 188 (2005).

5. *Id.* Global warming results from greenhouse gases that collect in the atmosphere and create an insulating blanket of molecules that absorb radiation and increase the temperature of the earth. See, e.g. ZYGMUNT J. B. PLATER, ET AL., ENVIRONMENTAL LAW AND POLICY: NATURE, LAW, AND SOCIETY 1042 (3d ed. 2004).

6. Spence, *supra* note 4, at 188. When we consider this global problem, it is important to realize that “the United States is the single largest emitter of carbon dioxide from the burning of fossil fuels.” Central Intelligence Agency, *World Factbook: United States*, (last accessed 18 Jan. 2007), available at <https://www.cia.gov/cia/publications/factbook/print/us.html>.

7. See The Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis Summary for Policymakers*, February 2007, available at www.ipcc.ch/SPM2feb07.pdf. The panel suggests that there is an over 90% certainty that man’s activities, especially the use of fossil fuels, results in global warming. The IPCC was created by the United Nations and the World Meteorological Organization to study Climate change in 1988; all members of UN and WMO are invited to participate. For more information, see <http://www.ipcc.ch/about/about.htm>.

8. For a list of countries with renewable energy targets, see The Int’l Energy Agency, *Global Renewable Energy Policies and Measures Database*, available at <http://www.iea.org/textbase/pamsdb/grlist.aspx?by=target>. Thirty-eight countries are listed. The Renewable Energy Policy Network states that there are at least 49 countries with RPS-like policies and 41 countries with feed-in supports for renewable energy. Renewable Energy Policy Network, *2006 Global Status Report: 2005 record year for Investments in Renewable Energies Report Summary*, available at <http://www.ren21.net/globalstatusreport/issueGroup.asp>.

tional policy would expand the success of state renewable portfolio standards. Moreover, a federal standard will enable the U.S. to participate in, and perhaps even lead, the twenty-first century renewable energy revolution, rather than remaining conspicuously missing from the global efforts to promote clean energy technologies and prevent global warming. This national policy will create a stable national market for renewable energy. Such a policy will diversify the U.S.'s energy supply, reduce the pollution that comes from energy generation, and enable the country to maintain its commitment to consistent and reliable energy while reducing America's dependence on fossil fuels (and the attendant geopolitical instability and pollution that accompany fossil fuel reliance), while allowing the U.S. to compete in the growing international market for renewable electricity-generating technologies.

I do not argue that renewables should be the only source of electric generation, but rather that the federal government should take its cue from the states and nations that have successfully implemented RPS policies to ensure that our renewable energy infrastructure can support a growing percentage of America's electricity needs.

Part II provides background information on sources of electricity. Part III discusses the history of electricity and the regulation of the electricity industry as a natural monopoly in the United States. Part IV introduces renewable portfolio standards and their role in promoting the generation of new renewable power. Part V discusses RPSs at the state level and discusses in detail Texas's RPS success, a success that provides a framework for a national policy. Part VI briefly examines Australia's commitment to renewable energy and their RPS. It also analyzes the European Union's approach to renewable energy, the regulatory approaches taken by the E.U. in relation to its member states and the intention to create a European standard to support renewable growth. Part VII provides an overview of the United States Senate's attempt to include an RPS in the Energy Policy Act of 2005 and analyzes the amendment's strengths and weaknesses in light of the other RPS policies. Part VIII argues that a national RPS policy is essential to promote renewable energy in the United States. While addressing critics and alternative approaches, I advocate a nationally-mandated RPS that would create a national trading market for renewable energy and provide

continuity across the state systems. Part IX offers a brief conclusion.

II.

SOURCES OF ELECTRICITY

In 2005, more than half of the electricity in the United States came from coal-fired plants (51%).⁹ The remaining power came from nuclear power (20%), natural gas (18%) hydroelectricity (7%), and petroleum (3%).¹⁰ Geothermal, biomass, solar, and wind combine to account for just over 1.5% of the net generation of electricity.¹¹ Although the data for 2006 only extends until September,¹² the data comparing the first nine months of 2005 to the first nine months of 2006 indicates almost a 50% drop in electricity generated from petroleum in 2006.¹³ The decrease in petroleum generated electricity did not, however, indicate a shift away from fossil fuel consumption. Natural gas generation increased to absorb the decrease in petroleum generation, while the other categories of electricity generation remained relatively stable.¹⁴

Our number one source of electricity contributes to a variety of environmental harms. Coal-fired plants emit particulate matter (a fine dust), sulfur dioxide, nitrogen oxides, and carbon dioxide, pollutants known to cause respiratory problems, acid rain, and global warming.¹⁵ The Clean Air Act (CAA) requires power plants to install pollution controls that limit some of the coal-fired plant's harmful pollutants, but the CAA does not regulate carbon dioxide emissions and does not apply to many of the oldest coal-fired plants in the Midwest due to a grandfathering clause in the legislation.¹⁶

In order to address the environmental harms of coal-fired plants, the Bush Administration has created a government-industry partnership to create "clean coal" technology that will in-

9. *Energy Review*, *supra* note 2.

10. *Id.*

11. *Id.*

12. *Id.*

13. *Id.*

14. *Id.*

15. Spence, *supra* note 4, at 188.

16. Spence, *see supra* note 4 at 192, 195. This article was written prior to the Supreme Court's decision in *Massachusetts v. EPA*, 549 U.S. 497 (2007) where the Court decided that the Clean Air Act gave the EPA the authority to regulate carbon dioxide emissions.

crease the efficiency of coal burning plants and decrease the pollutants associated with them.¹⁷ The Energy Policy Act of 2005 provides tax credits for the development of clean coal facilities and also directly funds clean coal research and development.¹⁸ Clean coal may be an important part of a stable national energy portfolio, but coal remains a finite fossil fuel that *alone* will not take our country to the next level of energy stability.¹⁹

Natural Gas, although much cleaner than coal, remains a finite fossil fuel. The United States imports natural gas from potentially unstable nations in order to meet its electricity demands.²⁰ Nuclear energy, although touted by the Bush administration as an essential component of an energy portfolio,²¹ faces opposition from state and local governments whenever their backyard is considered an appropriate location to store nuclear power's highly toxic waste.²² Nuclear generation creates wastes with long-term costs. Fossil fuels leave a residue of pollution and will eventually run out.²³ The United States' energy policy must support renewable technologies in order to create a sustainable, clean component to our energy portfolio that will spark innova-

17. U.S. Dept. of Energy, Office of Fossil Fuel Energy, National Energy Tech. Lab., *Clean Coal Power Initiative: Program Facts*, (2005) available at <http://www.netl.doe.gov/publications/factsheets/program/Prog052.pdf>.

18. U.S. DOE, Office of Fossil Fuel Energy, *Energy Bill Supports Coal*, 64 CLEAN COAL TODAY 1, 8, (Fall 2005), available at, http://www.netl.doe.gov/cctc/newsletter/documents/cctoday_fall_2005_Final_1.pdf.

19. Additionally, the harms from coal do not stop at pollution from burning the resource; there are other environmental implications. For example, in order to access seams of coal, miners have destroyed entire mountains in Appalachia. See <http://www.citizenscoalcouncil.org/facts/mtntop.htm>.

20. Steven Ferry, *Power Future*, 15 DUKE ENVTL. L. & POL'Y F. 261, 268-269 (2005) [hereinafter Ferry, *Power Future*]. From 2000 to 2005 the United States has imported Natural Gas from Canada, Mexico, Algeria, Australia, Brunei, Egypt, Indonesia, Malaysia, Nigeria, Oman, Qatar, Trinidad, and the United Arab Emirates, among other countries. Energy Info. Agency, *U.S. Natural Gas Imports by Country*, available at http://tonto.eia.doe.gov/dnav/ng/ng_move_imp_c_s1_a.htm (last updated 18 Jan. 2007).

21. See Cheney Urges 'Fresh Look' at Nuclear Power, CNN (May 8, 2001) available at <http://archives.cnn.com/2001/ALLPOLITICS/05/08/cheney.cnn/>.

22. See Jorge Contreras, Comment, *In the Village Square: Risk Misperception and Decision Making in the Regulation of Low-Level Radioactive Waste*, 19 ECOLOGY L.Q. 481 (1992); Sonny Swazo, Note, *The Future of High-Level Nuclear Waste Disposal, State Sovereignty and the Tenth Amendment: Nevada v. Watkins*, 36 NAT. RESOURCES J. 127 (1996).

23. Even oil companies like Chevron and BP recognize and advertise the need to find innovative new solutions. Chevron's website says, "Energy will be one of the defining issues of this century. One thing is clear: the era of easy oil is over. What we do next will determine how well we meet the energy needs of the entire world in this century and beyond." <http://willyoujoinus.com>.

tion in the United States and bring stability to our electricity infrastructure.

Renewable energy truly is the only source that does not diminish; no matter how much wind or solar power we use today, we have the same amount available tomorrow without any pollutants or waste. Renewable energy is defined in the Energy Policy Act as "electric energy generated from solar, wind, biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal, municipal solid waste, or new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project."²⁴ Although the definition of renewable energy varies slightly from state to state and regulation to regulation, the elements included in the Energy Policy Act reoccur. Renewable Energy does not diminish with use and generally does not pollute or cause harm to the environment.²⁵ In addition to the environmental benefits, domestically-generated renewable energy adds stability to the electric system. "[B]ecause renewable energy sources are not under the control of any nation or cartel, but are distributed across the earth, they are not subject to embargo or manipulation."²⁶

Before specifically analyzing renewable energy policy, it is helpful to review the history of our electrical system and the government regulation involved in keeping the lights on.

24. Energy Policy Act § 203(b)(2).

25. Large hydroelectric projects are generally excluded from eligible renewable energy sources lists for two reasons: 1) the environmental side effects of the projects and 2) the fact that large hydroelectric projects are for the most part already fully commercialized and therefore do not present a significant opportunity for renewable growth. Nancy Rader, *The Mechanics of a Renewable Portfolio Standard Applied at the Federal Level*, American Wind Energy Assoc. (1997) at 9, available at <http://www.awea.org/policy/rpsmechfed.html>.

26. Steven Ferry, *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, 514 [hereinafter Ferry, *Dormant Commerce Clause*]. On the other hand, renewables need some kind of backup power, because people do not control wind or sun, if the wind does not blow, there must be a backup source of power to keep the electricity flowing. This lack of controlled "always on" generation is a major criticism of renewable electricity. We certainly cannot stop working when the wind does not blow or the sun is not shining. But the more diverse and connected the renewable sources, the more likely it will be that renewables are able to provide backup power for other renewables. Also, RPS systems do not advocate 100% reliance on renewables, but rather diversified portfolios that include renewables.

III.

HISTORY OF ELECTRICITY AND ITS
REGULATION IN THE U.S.

In 1882, Thomas Edison flipped the switch to the first central power station in New York.²⁷ Edison's invention sparked a great change in the world. The electric grid allows energy generation to occur separate from energy use. To provide some examples, we can heat our homes without fire, we can dry our laundry without hanging it in the sun, we can deliver messages across the globe without moving more than our fingers on a keyboard and hitting send.²⁸ This new invention revolutionized America and gave rise to regulations to control the electricity industry.

Although the electricity market began as a competitive industry, it proved to be a natural monopoly.²⁹ When competitors duplicated transmission and distribution lines in an electricity market, efficiency declined and prices increased.³⁰ As the government came to understand the natural monopoly dynamics, it sanctioned electric utility monopolies in order to protect and promote the public interest imbedded in a consistent electricity supply.³¹ In exchange for these monopoly rights, the utilities agreed to provide consistent, satisfactory service and agreed that state utility commissions would set rates.³² In exchange for uninterrupted service, the commissions generally set prices on a "cost of service" basis that, although it did not guarantee profits for the utilities, virtually guaranteed that utilities would not suffer losses.³³ The regulated utilities' markets gave rise to vertically-bundled utilities that generated the electricity, transmitted it throughout their service areas, and distributed it to retail customers.³⁴

Cooperative federalism governs utilities. The Federal Energy Regulatory Commission (FERC) regulates wholesale transac-

27. Shapiro, *supra* note 3, at 503.

28. See Ferry, *Power Future*, *supra* note 20.

29. *Id.* at 506 (internal quotations omitted). A natural monopoly is defined as a ". . . business [that] require[s] such high capital investment in infrastructure that monopolies are more efficient because they avoid duplication of expensive infrastructure and can take advantage of necessary economies of scale."

30. Heather N. Jarvis, Note, *Keeping the Lights on—at All Costs? Imploring Consistent Prudence Review and a Prudence Standard that Includes Demand Response and Responsible Portfolio Management*, 29 VT. L. REV. 1037, 1039 (2005).

31. Shapiro, *supra* note 3, at 506.

32. Shapiro, *supra* note 3, at 507.

33. *Id.*; Jarvis, *supra* note 30, at 1039.

34. Jarvis, *supra* note 30, at 1039.

tions among generators, and the states' utilities commissions regulate retail transactions and set service areas monopolies for utility providers.³⁵ Over time, the government recognized that while transmission and distribution technologies remain a natural monopoly, generation could benefit from market competition. Federal legislation initiated a degree of competition in 1978 when the Public Utilities Regulatory Act (PURPA) and the 1992 Energy Policy Act broke open the generation monopoly by requiring utilities to transmit electricity from other generators, thus unbundling the vertical monopoly and creating a market for wholesale electricity outside of transmission and distribution.³⁶

Deregulation allows for the purchase of power from any source that can be transmitted into the state and distributed to retail customers. Restructuring of the wholesale electricity market creates uncertainty for utilities in terms of their business model, and more importantly, creates uncertainty about the environmental impacts of a market-based competition in electric generation. In the environmental impact statement (EIS) that evaluated deregulation, FERC asserted that if deregulation led to an increased use of natural gas it would be good for the environment, but that if it resulted in an increased use of coal, it would harm the environment.³⁷ The EPA and a coalition of senators challenged FERC's finding and asserted that FERC's deregulation rules would "increase emissions of particulate matter, CO², lead, mercury, and NO^x."³⁸

Deregulation opens the electricity market in a way that can facilitate increased renewable energy generation. But it also opens the door to increased pollution as the Midwest's cheap and dirty coal factories crank up to full capacity in order to provide cheap power to new markets.³⁹ Deregulation provides a perfect background for the nation to implement a Renewable Portfolio Standard that will utilize market forces to support renewable energy generation. This standard will not only meet the country's

35. *Id.* at 1040-41.

36. *Id.* at 1041.

37. Alan Miller & Adam Serchuk, *The Promise and Peril in a Restructured Electric System*, 12 NAT. RESOURCES & ENVTL. 118, 119 (1997).

38. *Id.*

39. *See id.* According to a report issued in 1999, the deregulation policies led to the increased use of coal burning facilities that produced an additional "298 tons of carbon dioxide in 1998. . . the amount equal to carbon dioxide emitted every year by about 44 million cars." The Environmental Working Group and U.S. PIRG Education Fund, *Up in Smoke: Congress' Failure to Control Emissions from Power Plants*, July 1999, available at <http://www.ewg.org/reports/upinsmoke/pr.html>.

current needs, but it will be able to provide non-harmful electricity for future generations.

IV.

RENEWABLE PORTFOLIO STANDARDS: AN OVERVIEW

A. *Elements of a Renewable Portfolio Standard*

Renewable Portfolio Standards consist of government regulations that “require that a certain percentage of a utility’s overall or new generating capacity or energy sales must be derived from renewable resources.”⁴⁰ Although RPS policies can be very complex, there are six basic elements necessary to an RPS.

First, the RPS must specify what percentage of renewably-generated electricity the standard will require, as well as the applicable time frame. Most standards provide for a gradually increasing requirement over smaller increments to arrive at the ultimate goal. For example, California requires a 2% increase in renewably generated electricity every year, aiming to have at least 20% of its electricity from renewables by 2010.⁴¹ Massachusetts’s standard requires a 1% increase in 2003 and a 4% increase from what is presently supplied by renewables, before 2009.⁴² Arizona has a goal of 15% renewables by 2025.⁴³ The best standards require a significant increase in renewable energy that is still achievable within the timeframe. These statewide standards apply to the regulated utilities respectively. In order to meet its 20% goal, every electricity provider in California will be required to show that 20% of the electricity it provided in the state came from renewable sources in 2010.

40. Database for State Incentives for Renewable Energy, *Glossary*, <http://www.dsireusa.org/glossary/glossary.cfm?CurrentPageID=8#renewables>. “Established in 1995, the Database for State Incentives for Renewable Energy (DSIRE) is an ongoing project of the Interstate Renewable Energy Council (IREC), funded by the U.S. Department of Energy and managed by the North Carolina Solar Center.”

41. Database for State Incentives for Renewable Energy, *Renewable Portfolio Standards: California*, http://www.dsireusa.org/library/includes/incentivesearch.cfm?Incentive_Code=CA25R&Search=TableType&type=RPS&CurrentPageID=7&EE=1&RE=1.

42. Database for State Incentives for Renewable Energy, *Renewable Portfolio Standards: Massachusetts*, http://www.dsireusa.org/library/includes/incentivesearch.cfm?Incentive_Code=MA05R&Search=TableType&type=RPS&CurrentPageID=7&EE=1&RE=1.

43. Database for State Incentives for Renewable Energy, *Renewable Portfolio Standards: Arizona*, http://www.dsireusa.org/library/includes/incentivesearch.cfm?Incentive_Code=AZ03R&Search=TableType&type=RPS&CurrentPageID=7&EE=1&RE=1.

Secondly, renewable portfolios must determine what kinds of technologies qualify as renewable under the RPS. In California, for example, electricity generated from the following sources qualifies as renewable energy: "solar thermal electric, photovoltaics, landfill gas, wind, biomass, geothermal electric, municipal solid waste, anaerobic digestion, small hydroelectric, tidal energy, wave energy, ocean thermal, biodiesel, fuel cells using renewable fuels."⁴⁴ The RPS law must also clarify if old renewable generators count toward the percentage of renewables required under the standard or if only new renewable generators qualify.⁴⁵

Third, the RPS must identify who is obligated under the RPS standard to provide or obtain a given amount of renewable energy. For example, renewable portfolio standards can obligate retail providers of electricity or electricity generators. Fourth, the drafters of an RPS must decide if the standard will include a renewable energy credit trading mechanism to facilitate the utilities' ability to meet their renewable obligations (discussed in detail in the next section).

Fifth, the RPS must designate an agency or office to administer the program, from certifying that a given amount of renewably-generated electricity entered the grid, to auditing the regulated providers to ensure compliance. Sixth, the RPS must set penalties in the case that a utility fails to meet its obligation. These policy elements will, hopefully, become clearer as the paper discusses RPSs as implemented in Texas, Australia, and the E.U.

B. *Renewable Energy Credits: A Key Market Trading Mechanism for RPSs*

RPSs vary in the details, but they generally include a renewable energy credit (REC) trading program that allows electric utilities to choose the most efficient way to meet the RPS

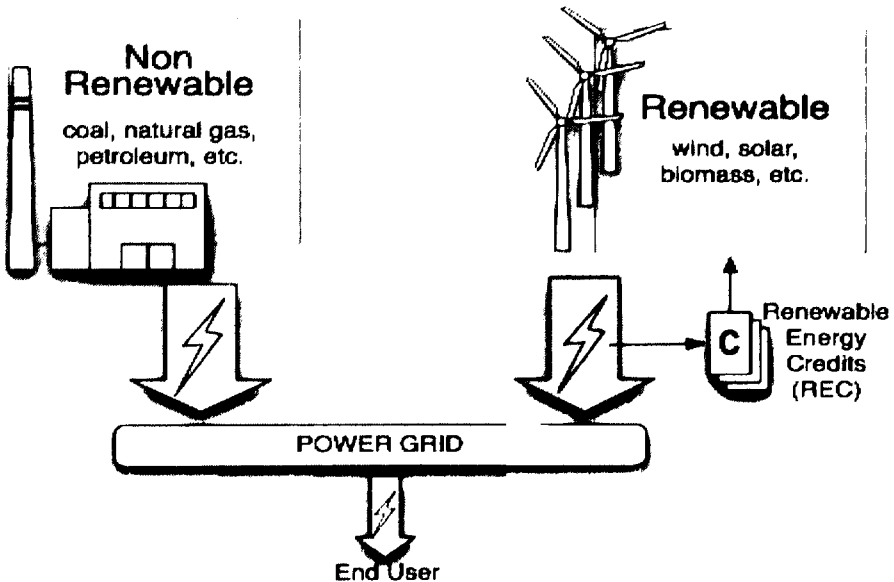
44. Database for State Incentives for Renewable Energy, *Renewable Portfolio Standards: California*, http://www.dsireusa.org/library/includes/incentivesearch.cfm?Incentive_Code=CA25R&Search=TableType&type=RPS&CurrentPageID=7&EE=1&RE=1.

45. This is in part determined by the wording of the RPS. If it says the goal is to *increase* renewable capacity 10% by 2010, then existing renewable generators would probably not count, but if the regulation requires 20% of all electricity in the state to come from renewables then existing renewable generators probably would count in that overall percentage. The policy ought to explicitly articulate the eligibility of existing renewables under REC trading programs and in meeting the RPS requirement. This will be discussed more, below, in terms of Texas's RPS.

requirement — by generating electricity from renewable sources, purchasing renewable energy on the wholesale market, or by purchasing REC's separate from the associated electricity.

The REC certifies that a unit of electricity (e.g., a kilowatt hour)⁴⁶ has been generated from a qualified renewable source. The renewably-generated electricity goes into the grid just like electricity generated from any other source. But when energy from a renewable source enters the grid, the RPS administrator certifies that it was generated renewably and awards the generator a REC. See Figure A.

FIGURE A
Renewable and Non-Renewable Power Entering the Grid,
Renewable Energy Credits Awarded to Renewable
Power upon Entering the Grid



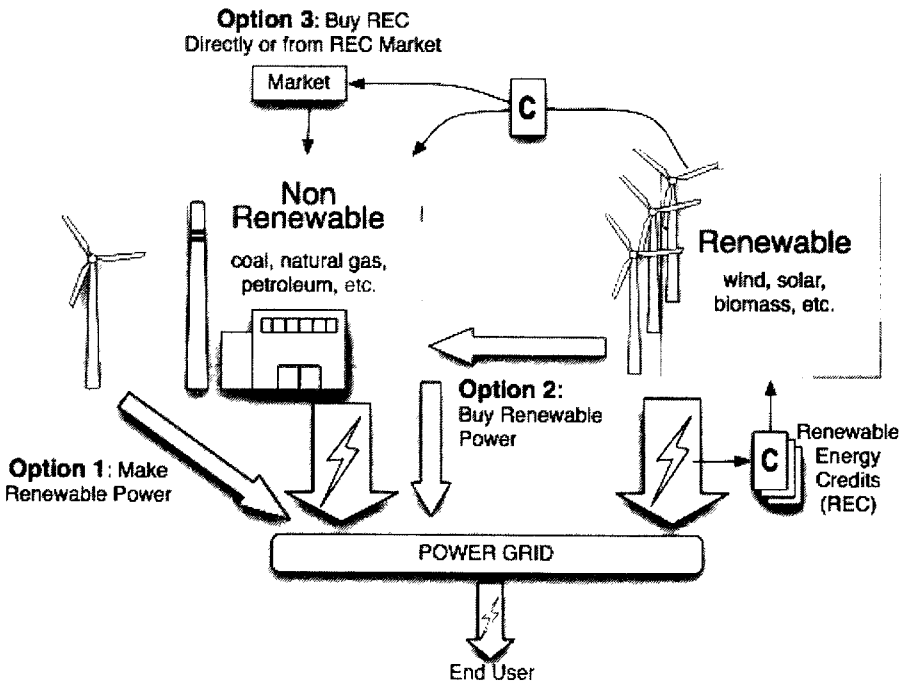
If the renewable portfolio standard requires generators to acquire 10% of their electricity from renewable sources, all generators will have to obtain REC's representing 10% of the electricity that they deliver into the grid. The generator can produce REC's through renewable electricity generation, purchase REC's bundled with the electricity that has been renewably generated, or purchase a REC' credit separate from the electricity itself (from either a REC' market or from the renewable generator). The

46. A kilowatt-hour is enough electricity to illuminate a 100 watt light bulb for 10 hours.

electricity delivered into the grid is the same whether it was generated by wind, sun, coal, or nuclear means. But the renewable energy also generates a REC. Renewably generated electricity basically sells two products: the electricity and the REC.

Under the same 10% RPS as discussed above, Wind Power Co. must retain 10 RECs to meet its RPS requirement, but has 90 to trade. Assuming that Coal Generator, Inc. also generates 100 kilowatt-hours of electricity, Coal Generator, Inc. will need to obtain 10 RECs (baseball cards). Coal Generator, Inc. can do this in three possible ways: 1) It can build a renewable energy generation facility that will generate RECs; 2) It can purchase the electricity and the REC, bundled together, from Wind Power Co.; or (3) It can purchase the REC from Wind Power Co., or a REC market, without purchasing the power that generated the REC. (See Figure B). Under the third scenario, the kilowatt-hour of electricity generated by Wind Power, Co. would enter the grid and be consumed, just like electricity from any other source. The REC would be available for purchase separate from the electricity. The third option is analogous to one person chewing the gum, while another person collects the baseball card.

FIGURE B
A Generator's Options for Obtaining RECs to Meet
the RPS Requirement



From the renewable generator's perspective, Wind Power Co. will retain the RECs from the first 10% of electricity it generates because Wind Power Co. must possess RECs (baseball cards) representing 10% of the electricity it generated to meet obligation under the RPS. The RECs generated with the other 90% of electricity Wind Power Co. produces can either be sold bundled with the electricity (bubble gum and baseball card), or separately (just the baseball card). The renewable generator can sell the REC directly to another generator who is obligated to obtain a certain number of RECs, or to a REC market. The market could then resell the RECs to utilities who need RECs.

The RECs represent that a specified amount of renewably-generated electricity entered the grid. Possession of RECs certify that the regulated party has met their RPS obligation. Whoever the regulation requires to meet the RPS, be it retailers or generators, bears the burden of obtaining the requisite RECs. The regulated parties who are required to purchase the RECs offset the marginal cost of renewably-generated electricity.⁴⁷ Hypothetically, if traditional power costs \$0.40/ kilowatt-hour, and wind power cost \$0.60/ kilowatt-hour, then the marginal cost of wind power would be \$.020/ kilowatt hour. The REC sale would offset that \$0.20 marginal cost.⁴⁸

The REC trading mechanism was inspired by the 1990 Clean Air Act's cap and trade system, a market trading mechanism that successfully reduced acid rain by 50 percent.⁴⁹ The Clean Air Act's market trading mechanism approach significantly reduced the cost of the regulation.⁵⁰ Similarly, a REC trading program

47. The REC obligation does not create a competitive disadvantage to the regulated providers because everyone on the same level of the distribution chain has the same REC obligation.

48. The REC may or may not entirely cover the marginal cost of renewable energy.

49. Rader, *supra* note 25, at 3; PLATER, *supra* note 5, at 713. In the case of the Clean Air Act Acid Rain abatement program, each polluter was allocated a certain number of pollution credits that correlated with the amount of SO₂ that polluter could emit. These pollution credits had value on their own in that if a factory could reduce their emission below their allotted share, they could trade, or sell, their pollution credits to another polluter who emitted more SO₂ than the credits he was allotted. The number of credits was fixed, but could be traded among polluters. Similarly, the amount of renewable energy that a certain retailer or generator must be responsible for subsidizing through RECs is fixed, but the generator or retailer can choose how to obtain the RECs.

50. "The efficiency and cost-savings accomplished under these market-based programs have surprised the world. SO₂ allowances that were predicted to cost \$600/ton or more under regulation-as-usual have fallen to just \$85/ton under the market-

will promote renewable energy in the most cost-effective and efficient manner.

C. *The Lack of a National RPS*

While the Senate has frequently proposed a national RPS, it did not include an RPS in the Energy Policy Act 2005. Critics assert that in addition to not establishing an RPS, the United States has “not sustained any significant renewable energy policy.”⁵¹ Proponents of the Energy Policy Act point out that the Act does provide support for renewables. But the data speaks for itself; the Energy Information Administration does not project significant growth in electricity supplied from renewables in 2010, 2020, or 2030 under the current state and federal policies.⁵² For example, the current administration focuses its renewable policy sights on biofuels rather than on electricity production.⁵³

Although a study published in 2004 stated that “fully three-fourths of those polled in the United States strongly support and desire government support of renewable energy,”⁵⁴ the Energy Policy Act of 2005 did not include a pervasive regulatory scheme that promoted renewable generation of electricity. Many states have filled this gap in federal policy with their own RPSs, demonstrating that RPSs can succeed in the United States.

V.

RPS AT THE STATE LEVEL AND TEXAS'S SUCCESS

In the vacuum of federal policy, 25 states and the District of Columbia have implemented RPSs.⁵⁵ Texas quickly became one of the largest renewable energy markets in the U.S. after the leg-

based trading system.” Nancy Rader, *The Mechanics of a Renewable Portfolio Standard Applied at the Federal Level*, American Wind Energy Assoc. (1997), <http://www.awea.org/policy/rpsmechfed.html#RenewableEnergyCredits>.

51. Shapiro, 40 WAKE FOREST L. REV. 497, 521.

52. Energy Info. Admin, Annual Energy Outlook 2007, Table 1, available at <http://www.eia.doe.gov/oiaf/aeo/index.html>.

53. See, e.g., State of the Union Address Jan. 23, 2007. President Bush suggested that the United States cut gasoline use by 20% in the next ten years. He suggests that ethanol and biodiesels will help support this reduction in gasoline dependence. The president did not mention renewable electricity generation.

54. DTI, *United States Renewable Energy Market Report 6*, 2004, available at www.dti.gov.uk/files/file15149.pdf.

55. Database for State Incentives for Renewable Energy, *Renewable Portfolio Standards*, <http://www.dsireusa.org/library/includes/type.cfm?Type=RPS&Back=regtab&CurrentPageID=7&EE=1&RE=1&Search=TableType>.

islature announced the RPS.⁵⁶ This success caused many scholars to analyze Texas's RPS. Commentators laud that Texas's RPS calls for retail providers within the state to include a percentage of renewable energy in the electricity that they provide.⁵⁷ Texas initiated its RPS in 1999 within the context of a restructured state electricity market⁵⁸ under then-Governor George W. Bush.⁵⁹ The RPS set a rather modest goal of "10,000 MW⁶⁰ of installed renewable [energy] capacity by 2025," with incrementally-increasing goals every two years, starting in 2005.⁶¹ The Texas RPS, upon announcement, drove a significant increase in wind installation in the state. Texas anticipates that it will not only continue to meet the RPS goals ahead of schedule but that it will ultimately exceed the RPS goals.⁶² The state RPS drives renewable generation because it establishes a certain minimum demand for renewably-generated electricity in Texas.

Texas proves that a well-designed and implemented RPS can cause the private sector to develop renewable energy with minimal government involvement. The Texas legislature implemented a framework for the RPS, including goals for increasing

56. See Ryan Wisner & Ole Langness, *The Renewable Portfolio Standard in Texas: An Early Assessment*, Ernest Orlando Lawrence Berkeley Nat'l Lab. (Nov. 2001) 10, [hereinafter Wisner, *Texas RPS*] available at, <http://eetd.lbl.gov/EA/EMP>.

57. See *id.* Although the Texas RPS is based on a whole value rather than a percentage of electricity within the state, the RPS requires electricity retailers to obtain a certain percentage of renewables. The percentage required of each retailer is determined by the retailer's share of energy sales within Texas and the state target for that year; Mike Sloan, *Renewable Energy Credits: A Success in Texas*, ENVTL. FINANCE (May 2001) available at www.environmental-center.com/articles/article1015/art15.pdf; Wisner et al., *Evaluating Renewable Portfolio Standards: A focus on Geothermal Energy*, prepared for Nat. Geothermal Collaborative at 95 (2003) [hereinafter Wisner, *Evaluating RPS*] available at www.geocollaborative.org/publications/RPS.pdf.

58. Wisner, *Texas RPS*, *supra* note 56, at 7.

59. *Id.*

60. MW stands for megawatt, or one million watts. (One kilowatt= 1000 watts). Watts are the measurement used to describe how much electricity could be produced at any given time, whereas the amount consumed over a period of time is described as a watt-hour. So a 100-watt light bulb lit for 3 hours would consume 300 watt-hours of electricity. See, e.g., Bob Bellemare, *What is a Megawatt*, UtiliPoint Int'l Inc., <http://www.utilipoint.com/issuelert/print.asp?id=1728>.

61. TEX. [UTIL] CODE ANN. § 39.904(a) (2005).

62. See e.g., Wisner, *Evaluating RPS*, *supra* note 57, at 98. Texas has extensive wind resources, the state ranks second in the United States for wind energy potential. American Wind Energy Assoc., *Wind Project Data Base: Texas* (Nov. 1, 2005) <http://www.awea.org/projects/texas.html>. In addition to the extensive wind potential in Texas, the Federal production tax credit for wind energy makes it economically competitive with natural gas at about 2.5 cents/kWh cost. Wisner, *Evaluating RPS*, *supra* note 52, at 98.

renewable capacity, and directed the Public Utility Commission of Texas (PUCT) to implement a renewable emissions credit (REC) trading program.⁶³ The legislature set deadlines for PUCT to adopt the rules and regulations that would govern the RPS.⁶⁴ The utility experts who developed the RPS's detailed rules, under the legislature's broad guidelines, created a comprehensible and executable RPS policy, a keystone of Texas's success. As one analysis put it, "the devil is in the details!"⁶⁵

PUCT developed straightforward rules⁶⁶ with clear definitions.⁶⁷ The rules revolve around a REC trading program, as mandated by the legislature.⁶⁸ PUCT rules manage demand for renewable electricity by allocating a REC purchase requirement to each competitive retail provider based on the percentage of electricity that provider provides within the state.⁶⁹ Retailers may obtain their mandated number of RECs by generating renewable electricity,⁷⁰ by buying RECs bundled with the purchase of electricity from new renewable energy facility,⁷¹ or purchasing the RECs from a qualified new facility separate from the electricity.⁷²

Under the regulation of PUCT, the Electric Reliability Council of Texas (ERCOT), an independent entity, administers the REC trading program.⁷³ The rules encourage the installation of new renewable facilities; the administrator only awards tradable RECs to new facilities and small producers (less than 2 MW⁷⁴).⁷⁵ "A facility is eligible to earn RECs if it relies exclusively on energy that is naturally regenerated, such as solar, wind, geothermal, hydroelectric, wave/tidal, biomass or biomass based waste products." Existing generators of renewable electricity cannot

63. See TEX. [UTIL.] CODE ANN. § 39.904(a) (2005).

64. *Id.*

65. Wisner, *Texas RPS*, *supra* note 56, at 14.

66. 16 TEX. ADMIN. CODE § 25.173 (2005).

67. *Id.* at § 25.173(c).

68. *Id.* at § 25.173(d).

69. *Id.* at § 25.173(h). The administrator updates this allocation based on shifts in the electricity market. *Id.* at § 25.173(h), (g)(10). "For example, if the RPS is set at 5%, and a generator sells 100,000 kWhs in a given year, then it would need to possess 5,000 RECs at the end of that year." Rader, *supra* note 25, at 2.

70. *Id.* at § 25.173(d)(2).

71. See *id.* at § 25.173(d).

72. See *id.*

73. See <http://www.ercot.com/services/programs/rec/index.html>.

74. 16 TEX. ADMIN. CODE § 25.173(c)(18).

75. *Id.* at § 25.173(c).

earn tradable RECs, but the production of renewable energy from existing facilities offsets REC requirements.⁷⁶

A REC “represents one megawatt hour (MWh) of renewable energy that is physically metered and verified in the state of Texas” and that meets the requirements for a qualified REC facility.⁷⁷ ERCOT awards RECs to qualified facilities on a quarterly basis.⁷⁸ ERCOT also establishes a REC account for each retailer and renewable generator through which the RECs are awarded, tracked, and retired (once the RECS fulfill an RPS requirement they are retired).⁷⁹ The tradable REC program is crucial to the success of Texas’s RPS because, “the innovation of tradable RECs allows electricity providers from any area of the state to seek the lowest cost renewable resources without having to take delivery of the electricity.”⁸⁰ The purchase of a REC subsidizes the marginal cost of renewable electricity, allowing the renewable provider to sell the electricity into the grid at a price competitive with other sources of electricity.

In addition to the REC trading program, observers have pointed out several keys to Texas’s RPS success. Texas’s RPS has strong political support and regulatory commitment as indicated by public opinion surveys⁸¹ and the clear rules drafted by PUCT.⁸² The increasing RPS requirements, stretching far into the future, creates reliable renewable energy mandates that give retailers the confidence to sign long-term contracts with renewable energy generators, which in turn allows the renewable energy generators to access capital and low interest loans, perpetuating investment in renewable energy.⁸³ The rules establish efficient administration and clear penalties for failing to comply with the RPS.⁸⁴ The RPS also provides sufficient flexibility to the retailers to meet their obligations.⁸⁵ The obligations are calculated on a calendar year, but the administrator does not account for the REC obligations until April, providing time for retailers to do some last-minute REC purchasing.⁸⁶ Additionally, the RECs re-

76. *Id.* at § 25.173(c)(10).

77. *Id.* at § 25.173(c)(11).

78. *Id.* at § 25.173(g).

79. *Id.*

80. Sloan, *supra* note 57.

81. Wisner, *Texas RPS*, *supra* note 56, at 8.

82. *Id.* at 14.

83. *Id.*

84. *Id.*; 16 TEX. ADMIN. CODE § 25.173(o).

85. Wisner, *Texas RPS*, *supra* note 56, at 8.

86. *Id.*; 16 TEX. ADMIN. CODE § 25.173(o).

main valid for three years, allowing retailers to bank credits.⁸⁷ Texas's success provides a framework for a successful national RPS.⁸⁸

VI.

WHAT THE U.S. CAN LEARN FROM AUSTRALIA AND THE EUROPEAN UNION

Australia's national renewable portfolio system demonstrates a valuable approach to promoting renewable energy at a national level, without any specific international commitment to reduce greenhouse gases. The European Union illustrates how a multinational organization driven by commitments to reduce greenhouse gases is pursuing its goal, in part, through a commitment to renewable energy. The E.U.'s relationship to its member states, in some ways, parallels the U.S.'s relationship to its states. An evaluation of E.U. policies provides insights in to what may be required in a national renewable energy policy.

A. *Australia's Commitment to Renewable Energy*

Australia, who until December of 2007 had not ratified Kyoto,⁸⁹ has successfully implemented a national RPS. Australia's policies have led to significant investment and exciting innovation in renewable energy, including the attention-grabbing 200MW solar tower project that will produce electricity 24 hours a day, even when the sun is not shining.⁹⁰

87. 16 TEX. ADMIN. CODE § 25.173(m)(4).

88. Of course, Texas is not the only successful RPS. It has been frequently discussed and analyzed because the RPS catalyzed significant renewable growth in the state. It was the sixth state in the U.S. to adopt an RPS. But, according to some commentators, it was "the first to promulgate meaningful implementation rules.;" Sloan, *supra* note 57; Further, Texas's RPS's relative simplicity and proven track record makes it a promising model for a federal RPS standard. For a good overview of state RPSs see DSIRE *Renewable Portfolio Standards for Renewable Energy*, <http://www.dsireusa.org/library/includes/type.cfm?Type=RPS&Back=regtab&CurrentPageID=7&EE=1&RE=1&Search=TableType>.

89. United Nations Framework Convention on Climate Change, Parties to the Convention and Observer States, http://unfccc.int/parties_and_observers/parties/items/2352.php.

90. EnviroMission Australian Solar Tower Project, <http://www.enviromission.com.au/project/project.htm>. This innovation brings wonder and excitement to the future of renewable energies. Australia's policies (along with its vast open space) made it possible for EnviroMission to begin to realize its ambitious solar project. *See also*, Steve Leahy, *Solar Tower of Power Finds Home*, WIRED NEWS 24, Feb. 2005, *available at* <http://www.wired.com/news/technology/0,66694-0.html>. Don't miss the animation.

In 2000, Australia passed the *Renewable Energy (Electricity) Act 2000*. The Act included a Mandatory Renewable Energy Target (MRET) system, the equivalent to an RPS, which requires energy retailers to acquire an additional 2% (9,500GWh)⁹¹ of renewable energy by 2010.⁹² Australia's policy is substantially similar to Texas's in that it creates a tradable REC market with similar banking and compliance requirements.⁹³ Australia's energy policy accepts its global responsibility for GHGs and climate change, treating renewable energy as a valuable resource to support its domestic economy.⁹⁴ Australia categorizes its wind, solar, geothermal resources along with its oil, gas, and coal resources as valuable natural resources that the government can harness to promote its economy.⁹⁵ In addition, renewable energies have the added value of not harming the environment. Australia is not alone in creating policies that support renewable energy for economic and environmental advantages, but its notable policy is one from which the United States could learn, and with whom the United States will have to compete.⁹⁶

B. *The European Union's Harmonized Approach within its Member States*

In 2001, the European Union passed a Renewable Electricity Directive.⁹⁷ The directive aims to have renewably-generated electricity meet 21% of electricity consumption in the E.U. by 2010.⁹⁸ The E.U. decision to require member states to promote

91. GWh stands for Gigawatt-hour, a gigawatt hour is one billion watt hours.

92. Mark Detsky, *The Global Light: An Analysis of International and Local Developments in the Solar Electric Industry and Their Lessons for United States Energy Policy*, 14 COLO. J. INT'L. ENVTL. L. & POL'Y 301, 313 (2003); <http://www.greenhouse.gov.au/markets/mret/>. To conceptualize how much impact this increased renewable generation will have, the Australian government states that, its "enough energy to meet the residential electricity needs of four million people" presumably for a year. *Id.*

93. See Detsky, *supra* note 92, at 313.

94. Australian Government, *Securing Australia's Energy Future*, (June 15, 2004), http://www.dpmp.gov.au/publications/energy_future/docs/energy.pdf.

95. *Id.* at 36.

96. See Detsky, *supra* note 92, at 307-21.

97. Parliament and Council Directive, On the Promotion of Electricity Produced From Renewable Energy Sources in the Internal Electricity Market. 7001/77, O.J. (L283) 33-40 [hereinafter Renewable Energy Directive].

98. *Id.* at 35, 39. The E.U. aims to have renewables account for 12% of its overall gross domestic energy consumption (including heating, electricity, and transport) by 2010, in order to meet that goal, electricity produced from renewable energy sources, which they abbreviate as RES-E, must meet the 22% target. *Id.* at 35. See also EurActiv, *Renewable Energy in the E.U.*, (Published 17 Aug. 2004, Updated 23

renewable energy within the E.U. internal market comes from a variety of motivations, including desires to stabilize the price of energy, to create a competitive edge for the E.U.'s renewable energy industry, to improve economic and social situations in rural areas, to increase its capability to meet electricity demands in developing countries, and to meet its Kyoto commitments.⁹⁹

The E.U. intends to have an E.U.-level regulatory framework (such as an E.U. REC or what they call "green certificate" market) to promote renewable energy within their member states.¹⁰⁰ The E.U. directive sets a guideline target for each member state to generate a certain percentage of electricity from renewable sources.¹⁰¹ The member state must then implement national policies to meet the target set by the E.U.¹⁰² These national indicative targets take into consideration the member states' current renewable production capacity and what percentage the member states must reach in order to contribute to the overall community goal.¹⁰³ The member states choose the support mechanism that they prefer in order to accomplish the goal set out in the direc-

Jan. 2007), available at <http://www.euractiv.com/en/energy/renewable-energy-eu/article-117536#section-3>. The original directive states that the goal is 22%, but when the 10 new member states joined the E.U. in 2005, the E.U. and adjusted the target for E.U. 25 to 21% renewables by 2010. *Communication from The Commission to the Council and the European Parliament, The Share of Renewable Energy in the E.U.* COM (2004) 366 final. Brussels May 26, 2004 at 11. As of 2003, Renewables accounted for 14% of the electricity generated in the 25 E.U. member states. Coal and nuclear each generated 31% while gas provided 19% and oil 5%. See *infra* note 99, *Commission Communication*, at 19.

99. Renewable Energy Directive at 33(1). See also Commission of the European Communities, *Communication from the Commission: The Support of Electricity from Renewable Energy Sources* (Dec. 7 2005) [hereinafter *Commission Communication*] p. 3. at 19.

100. Renewable Energy Directive, *supra* note 97, at 33(4) inviting the Commission to put together a proposal for a community framework to promote renewable energy. See also *Commission Communication*, *supra* note 99, at 3.

101. Renewable Energy Directive, *supra* note 97, at 39.

102. Renewable Energy Directive, *supra* note 97, at 39. Part of implementing the directive in their member state is setting the target, but to comply with the directive, the member states are obligated to adopt the directive's indicative target percentage as their national percentage. *Id.* at 33 (5)-(7). Presumably the member state would still be in compliance with the directive if it adopted a higher percentage of renewables than the indicative target.

103. Renewable Energy Directive, *supra* note 97, at 39. The Treaty on the European Union states that directives, "shall be binding as to the results to be achieved on each Member State to which it is addressed but shall leave to the national authorities the choice of form and methods." Consolidated Versions of the Treaty Establishing the European Union and the Treaty Establishing the European Community, Dec. 29, 2006, 2006 O.J. (C 321) 153, art. 249.

tive.¹⁰⁴ The approaches most-used in the member states include green certificates, feed-in tariffs (where generators of renewable electricity sell their power at a fixed price, regardless of the cost of generating that electricity), and tax incentives.¹⁰⁵

The European Union uses these member state programs to facilitate renewable energy production growth in the E.U. and to gather information about the most effective mechanism for supporting renewable energy growth.¹⁰⁶ The European Union has evaluated the member states' incentive programs with an eye toward creating an E.U. level policy.¹⁰⁷ The Commission found that feed-in tariff systems have been the most successful at promoting renewable energy production in the member states.¹⁰⁸ But green certificates (the E.U. version of renewable energy credits) are probably more promising for an E.U.-wide regulatory framework because they are less likely to distort the market and easier to manage across a variety of renewable sources.¹⁰⁹

Green certificates parallel the RECs that accompany RPS programs. In green certificate member states, a country's national law implements the E.U. directive and requires that a set percentage of electricity come from renewable generation technologies. Either through that implementation law or subsequent regulations, the nation allocates to each retailer or producer a quota or percentage of green certificates that they must ob-

104. Renewable Energy Directive, *supra* note 97, at 34 (14).

105. *Commission Communication*, *supra* note 99, at 4.

106. The directive harmonizes the policies in the member states, but does not necessarily implement an E.U.-wide policy. A regulation, in contrast to a directive that leaves implementation to the MS, would create a standardized E.U. law directly applicable within each member state.

107. *Commission Communication*, *supra* note 99, at 4. Feed-in tariffs set a specific price for renewable energy that the electricity companies must pay to generators of renewable energy. Feed-in tariffs provide stability in the sale price for renewables that catalyzes investment into renewable technologies, which is why they have so successfully increased renewable generation.

108. *Commission Communication*, *supra* note 99, at 4. See also Germany's Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), *Evaluation of Different Feed-in Tariff Design Options—Best Practice Paper for the International Feed-in Cooperation*, 2007 available at http://www.wind-works.org/articles/feed_laws.html#What%20are%20Tariffs?.

109. *Commission Communication*, *supra* note 99, at 4. Feed-in tariffs present the risk of over funding if the renewable technologies become more efficient and cost effective while the tariff remains static. Also the Commission predicts that feed-in tariffs would be difficult to harmonize across the E.U. given the fact that the price of electricity and the price of renewable electricity generation vary between member states. *Id.* Not to mention the fact that feed-in tariffs distort competition more than green certificate programs do. The E.U. favors electricity deregulation and hesitates to fix prices.

tain.¹¹⁰ The renewably-generated electricity is generally sold at market price; however, it also produces a green certificate, identical in principle to the renewable energy credit generated under an RPS. The regulated energy group (producer or retailer) must obtain green certificates through purchase, trade, or generation, to meet their quota.¹¹¹ Naturally, a secondary market for green certificates arises where the renewable energy producers compete with one another to sell green certificates.¹¹²

Given the potential to distort the market through feed-in tariffs, an E.U.-wide green certificate program presents the most promising option for an E.U.-level renewable energy policy. The Commission identified distinct advantages to an E.U.-wide renewable energy policy including: reduced cost of meeting the targets, opportunity for economies of scale in the renewable market, and a bigger and more liquid green certificate (REC) market that would provide for more stable green certificate prices.¹¹³

The Commission also identified challenges to an E.U.-wide system. First, a harmonized green certificate system that fails to differentiate by technology may hinder the development of cost effective renewable sources.¹¹⁴ The Commission also feared that an E.U.-wide, rather than a member state-governed policy could contribute to "NIMBYism."¹¹⁵ Aesthetic or other reasons may make the member states with strong renewable resources that efficiently create electricity (like wind) disinclined to build capacity beyond that necessary to meet their own national standards.¹¹⁶

110. *Commission Communication, supra* note 99, at 4.

111. *Commission Communication, supra* note 99, at 4.

112. *Commission Communication, supra* note 99, at 5.

113. *Commission Communication, supra* note 99, at 11.

114. *Commission Communication, supra* note 99, at 11. For example, if the biomass fueled electricity in Denmark is more expensive to produce than the wind power in Spain and all E.U. organizations can choose to buy green certificates from the E.U. market, they will not promote the more expensive biomass, and biomass technology will dwindle. This is only a problem if the policy aims to create diversity in renewable supply. It is not a problem if the policy encourages efficient renewable generation whatever the renewable source and allows the market to reward efficiencies.

115. *Commission Communication, supra* note 99, at 11. NIMBY stands for Not In My Back Yard—a syndrome by which even if people support the policy such as renewable electricity generation they do not want the wind tower in their neighborhood.

116. This concern is one more specific to Europe, which is made up of different countries, than to the United States. In the United States we experience NIMBYism in terms of nuclear waste, but it is likely that states with strong renewables would see a national RPS as an economic boon rather than a burden. The E.U. also faces the

The European Commission's 2004 analysis of the directive showed that the E.U. was on target to achieve only 18-19% electricity generated from renewable sources by 2010, rather than the 21% target, because some member states failed to implement policies that support renewable growth.¹¹⁷ Presumably, an E.U.-level program persuades all member states to be on target.

The European Union continues to debate its next step to accelerate renewable electricity growth.¹¹⁸ The E.U. directive and the Commission's analysis illuminate many possibilities that the United States can consider for a national renewable portfolio system. Even as it debates E.U.-level policies, the E.U. is rapidly moving forward with renewable commitments in every member state, through the directive. The European Union is already significantly ahead of the United States in terms of its renewable capacity. E.U. efforts should inform and catalyze United States action.

VII.

SENATE RPS PROPOSAL FOR THE ENERGY POLICY ACT OF 2005

After four and a half years of debate, the United States Congress recently passed a comprehensive energy bill, the Energy Policy Act of 2005. Earlier attempts had been very controversial. Arizona Senator John McCain dubbed the 2003 Energy Policy Act, which did not pass, the "Leave No Lobbyist Behind Bill."¹¹⁹ The Energy Policy Act of 2005¹²⁰ covers everything from drilling in the Arctic National Wildlife Refuge (the bill itself does not open ANWR to drilling) to the repeal of the CAA's 1990 provi-

major issue that it does not have a fully competitive internal electricity market; it is still dealing with regulations and infrastructure from various countries not used to considering themselves part of a larger European Union. Often these countries do not have the infrastructure to transmit electricity across borders. See *Commission Green Paper on A European Strategy for Sustainable, Competitive and Secure Energy*, at 3, COM (2006) 105 final (March 8, 2006).

117. Communication from The Commission to the Council and the European Parliament, *The Share of Renewable Energy in the EU* COM(2004) 366 final. Brussels May 26, 2004.

118. See, e.g., Stefan Nicola, *Analysis EU Push for Renewable Goals*, UNITED PRESS INT'L (March 2, 2007), available at <http://www.upi.com/Energy/view.php?StoryID=20070302-035436-7856r>.

119. See Center for Public Integrity, *The Politics of Energy: Coal, how did coal become the Bush Administration's fuel of choice?*, Center for Public Integrity Reports, (Nov. 21, 2003) available at <http://www.publicintegrity.org/report.aspx?aid=80>.

120. Energy Policy Act of 2005, Pub L. No. 109-58 (2005).

sion that required MBTE additives to gasoline (a rule that proved harmful to water supplies).¹²¹

The final bill did not include a federal RPS, although all Senate energy bills, including drafts of this one, have included an RPS since 2002.¹²² New Mexico Senator Jeff Bingaman, the primary sponsor of the RPS amendment¹²³ called an RPS an “essential component of any comprehensive national energy policy.”¹²⁴ The Senator cited the major benefits of a national RPS, declaring:

This provision would reduce our dependence on traditional, polluting sources of electricity. It would reduce our dependence on foreign energy sources. It would reduce the growing pressure on natural gas as a fuel for the generation of electricity. It would reduce the price of natural gas. It would create new jobs. It would make a start on reducing greenhouse gas emissions. It would increase our energy security and enhance the reliability of the electricity grid.¹²⁵

The Bingaman Amendment attempted to promote renewable energy investments through market mechanisms. The amendment required retail electric providers to obtain an increasing percentage of renewable energy.¹²⁶ The retail providers could fulfill the annual percentage requirement¹²⁷ by generating renewable energy, by purchasing energy from a new or existing renewable source, or by purchasing renewable energy credits (REC) from producers of new sources of renewable energy or the Secretary of State.¹²⁸ Retail providers who failed to comply with the RPS standards would suffer a civil fine.¹²⁹ Proceeds from fines and from the purchase of RECs from the government would fund research and development of state energy conservation

121. *Id.*; see also, Shirley Neff, *Review of the Energy Policy Act of 2005* (Aug 2, 2005), <http://www.beg.utexas.edu/energyecon/thinkcorner/Highlights%20of%20the%20Energy%20Bill.pdf>.

122. 151 CONG. REC. S. 6673 (daily ed. June 16, 2005) [hereinafter *RPS hearings*] (statement of Sen. Bingaman); see also Neff, *supra* note 31.

123. CONG. REC. S. 6769 (daily ed. June 16, 2005) (SA 791).

124. *RPS hearings*, *supra* note 32 (statement of Sen. Bingaman).

125. *Id.*

126. 151 CONG. REC. S. 6769 (daily ed. June 16, 2005) [hereinafter *RPS Amendment*], SA 791.

127. Energy retailers were required to annually obtain renewable energy on an increasing schedule: 2.5% for 2008–2011, 5.0% for 2011–2015, 7.5% for 2016–2019 and 10.0% for 2020–2030. *Id.*

128. *Id.*

129. *Id.*

plans.¹³⁰ The Amendment instructed the Secretary to issue detailed rules to implement the RPS within a year of the Act's passage.¹³¹ The Bingaman Amendment passed in the Senate¹³² but failed to make it into the final Energy Policy Act.¹³³

A. *Analysis of the RPS Amendment*

The Bingaman Amendment included some of the key components required of a successful RPS, as illustrated by Texas's success. The amendment set increasing but realistic requirements, imposed penalties for compliance failure, and delegated the responsibility for rulemaking to an expert body that would promulgate detailed working rules to fit industry practices.

The amendment's weaknesses are fourfold. First, it did not have the popular support required to pass in the House of Representatives. Second, the amendment aimed its regulation at retailers, rather than at generators, where the federal government historically regulates. Third, in delegating responsibility to the Secretary of Energy to administer the RPS program, rather than to an independent and dedicated organization, the amendment may have created a bureaucratic nightmare. Fourth, the provision that allowed retailers to purchase REC credits from the government weakened the mandate for development of renewable energy electricity. Examining each of these weaknesses in greater detail reveals what might make a more effective national RPS.

It seems unremarkable to say that the weakness of a failed amendment was that it lacked the requisite support. Examining the political background in the United States reveals some of the reasons that the amendment failed. Renewable energy has lacked support in the federal government despite that RPSs have gained momentum in the states and that policies promoting renewable energy pervade other countries. There are several possible reasons for this. One, the United States does not have a

130. *Id.*

131. *Id.* at (e).

132. 151 CONG. REC. S. 6700 (daily ed. June 16, 2005).

133. Energy Policy Act, Title II. The bill passed both the house and the senate without the RPS. In the Senate there were 74—yeas and 26—nays. Senator Bingaman and Senator Barack Obama, cosponsors of the amendment voted for the bill, while other co-sponsors like Senator Hilary Clinton voted against it. Most of the opposition to the Energy Policy Act in the Senate stemmed from a provision requiring ethanol in fuel, a requirement that was not proven scientifically. Neff, *supra* note 31, at 9–10.

strong commitment to reduce greenhouse gases as does Australia and the European Union. Two, the United States does not view renewable energy as a resource that can be exploited for economic growth.¹³⁴ Although Senator Bingaman addressed the job-creation possibility in his advocacy for the amendment, the renewables market is just barely gaining the position that it has in Australia and the E.U. as a viable and important sector of the economy.¹³⁵

The amendment may have aimed at the wrong sector of the electricity chain by regulating retail providers—a class long regulated by the states. (See *Supra* Section III). Representatives may be more amenable to a regulation aimed at electricity generators, an area more traditionally governed by the federal government.

Unless the amendment's instruction to have the Energy Secretary manage the REC trading system also allows the Secretary to delegate that responsibility to a specific group within the agency or to an outside organization, the amendment's REC trading system would probably have created a bureaucratic nightmare. Running a market for tracking and selling REC credits is best done by an organization experienced in this type of recordkeeping. Texas's RPS success results, in part, from having ERCOT, an independent agency, accredit, administer, and oversee the issuance, sales, and reconciliation of REC credits. This sort of delegation would serve a federal RPS well.

The amendment also allows electric utilities to purchase renewable energy credits from the Secretary for 1.5 cents per kWh.¹³⁶ This major flaw undermines the RPS's main function: ensuring demand for renewable energy that will drive investment in the technology. Private sector investment, encouraged through the RPS, will ultimately drive down the price of renewables and make them cost competitive with more traditional sources of electricity. Under the Bingaman Amendment, if the marginal cost of renewable energy exceeded 1.5 cents per kilo-

134. Although the U.S. Dept. of Energy has promoted renewables' economic benefit for at least a decade, see U.S. DOE, *Dollars from Sense: The Economic Benefits of Renewable Energy* Sept. 1997, the potential economic benefits of renewables have not captured mainstream America's attention.

135. Renewable fuels such as ethanol and bio-diesel, rather than renewably generated electricity has caught America's attention (although these are still marginalized). Perhaps this is due to the presidential agenda, the price at the gas pumps, or the general awareness of transport fuel (gas stations advertise their prices widely) in contrast to electricity which seems to always work without much thought.

136. *RPS Amendment*, *supra* note 151, at (2)(B).

watt hour, then the utilities would not purchase or generate renewable energy or the REC credit associated with such energy. It would be cheaper to purchase RECs up to their required quota from the Secretary. Although the proceeds from these purchases will fund state energy conservation and renewable promotion, this is an indirect way to support renewables that requires significant government involvement.

The Government's sales of RECs basically puts a ceiling on the RPS because only renewables who can compete in the market by generating less than 1.5 cents per kilowatt hour for the REC will benefit from the RPS. Although some may consider this a positive policy element, there are major drawbacks to such a cost ceiling. The ceiling decreases investor certainty as to the demand for renewable generated electricity because renewable demand is still tied to the fluctuating cost of fossil fuel and nuclear electricity generation. If mainstream electricity production costs decline, leaving renewables with a marginal cost of 1.5 cents or more above market price for a kilowatt hour of electricity, the market for renewably generated electricity dries up. This will be true even if the marginal cost of solar or wind reaches a mere 1.6 cents per kilowatt hour.¹³⁷ This ceiling eliminates investor certainty, decreases investment, and limits private investment in renewables.

Although the Bingaman Amendment had some flaws, in light of the successful RPS and renewable policies in Texas, the E.U., and Australia, the United States would be remiss to not utilize RPSs, a proven policy tool, to promote renewable energy.

VIII.

THE UNITED STATES NEEDS A NATIONAL RPS

A. *Why the U.S. Needs a National Renewable Policy*

Energy Policy affects the United States' national security, economy, and the environment. The nation needs to create a renewable standard to move the nation securely and sustainably into the twenty-first century by promoting technological innova-

137. This sort of a price ceiling also hinders the development of renewable sources that are currently less efficient. For example, if a generator can buy the majority of his REC requirement from wind generation for 1.3 cents, but the remaining RECs come from solar that must sell its RECs at 1.6 cents in order to fund the developing technology, the generator will instead buy REC credits from the government, hindering growth and investment in solar power. This would diminish the possibility that solar power could develop into a cost competitive resource.

tion and investment in renewable technologies to generate electricity. A national RPS does not just make environmental sense; it makes sense economically. Australia and the E.U. member states endorse the production of renewable energy as an important economic policy that both ensures continued electricity supply and generates a new industry. The United States does not want to be left behind.

Further, the more electricity that the nation can generate from renewable resources domestically, the less it needs to rely on imports from foreign countries. In the U.S., increased reliance on renewable energy can help to insulate the U.S. from the geopolitical issues associated with fossil fuel-rich and often unstable regions. Imagine if the world's response to a country's assertion that they need nuclear reactors for electricity generation could realistically be, "nuclear is unnecessary; invest in wind and solar towers." This could distinctly reduce dangers of both war and nuclear proliferation.

If some states can successfully promulgate RPSs that increase their renewable generation capacity, the U.S. should certainly be able to do so as a nation. As a nation the US can leverage its diversity and its size to make the renewable energy market more efficient.

B. *Addressing Arguments against a National RPS*

Given that many nations and states have implemented RPSs,¹³⁸ why did the RPS amendment fail? There are a variety of arguments people make against the National RPS. For example, the Bush Administration came out against the national renewable portfolio standard, stating, "these standards are best left to the States. A national RPS could raise consumer costs, especially in areas where these resources are less abundant and harder to cultivate or distribute."¹³⁹ In addition to the President's concerns about cost, in an article entitled, "Congress Got it Right: There's no need to Mandate Renewable Portfolio Standards," Mary Ann Ralls states that a national RPS is not neces-

138. For information on the number of nations that have adopted policies promoting renewable electricity generation, *see supra* note 7.

139. Office of Management and Budget, Statement of Administrative Policy: HR 6 Energy Policy Act of 2005, *available at* <http://www.whitehouse.gov/omb/legislative/sap/109-1/index-date.html>.

sary to spur renewable growth.¹⁴⁰ She states that the federal government already supports renewables in other ways, that state, local, and regional efforts already stimulate renewables through RPSs, and that flexible smaller scale programs are more effective than a national standard. Careful analysis of these arguments illustrates countervailing factors that support a national RPS.

It is nearly impossible to find a report that directly compares renewable energy costs to traditional power costs.¹⁴¹ Renewables are more costly than traditional power only if traditional fossil fuel and nuclear power generators are allowed to externalize environmental costs that result from that kind of electricity generation. Further, a national RPS accompanied by a REC trading system (that enabled the regulated bodies to purchase RECs even if they cannot receive the power) would spread the marginal costs of renewable electricity generation over the entire country, so it would not disproportionately harm those who may not live next to the most efficient renewable resources. In contrast to a federal program, state-by-state programs limited to their own renewable resources can create increased costs in areas that have limited renewable resources. Private investment and innovation spurred by policies that promote renewable energy have dramatically reduced the cost of renewable electricity. A national RPS program would catalyze more growth and more investment, further diminishing the cost of renewables and making the RPS less, rather than more, expensive for consumers.

Ms. Ralls asserts that the federal government already sufficiently supports renewables through tax credits and soft requirements, such as the suggestion that state regulatory authorities

140. Mary Ann Ralls, *Congress Got it Right: There's no need to mandate Renewable Portfolio Standards*, 27 ENERGY L. JOURNAL 451, 451.

141. One interesting comparison is that the author's Provo Power bill rate was \$0.0698 per kWh in January of 2007. *Provo Power Bill* on file with author. In the Salt Lake Area, although not in Provo, electricity customers can enroll in a Blue Sky Program where customers pay \$1.95 for 100 kWh blocks of wind power that are introduced into the grid in the Rocky Mountain West. These "green tags" that consumers purchase work in the same way as RECs, they come into being when the renewable energy enters the grid, but can be purchased separately from the power itself. This price subsidizes the marginal cost of wind power in the case of the Blue Sky Program. Rocky Mountain Power, *Blue Sky* <http://www.utahpower.net/Article/Article22009.html> (last visited 28 March 2007). If this price for blocks of wind reflects the marginal cost of wind power, then renewable power available through Rocky Mountain Power is only \$0.0195/kWh more than regular power. This would increase the author's bill by only \$4.11 (the bill was for 211 kWh). This is hardly a budget busting increase. (28%).

consider fuel diversity when they set up their regulations.¹⁴² The sheer fact that 25 states and the District of Columbia have implemented RPS standards indicates that the federal policies are insufficient. The lack of significant renewable energy production in the U.S. also indicates that federal policy could do more to promote renewables.¹⁴³

The assertion that the states' programs can sufficiently address the need for diversified renewable energy, making a federal policy redundant, overlooks the scope of the problem. Although the state RPSs catalyze significant increases in renewable electricity, they cannot make the significant gains necessary to stay competitive with other nations like Australia and the E.U., or to address significant issues of climate change, or to "secure a sustainable energy economy."¹⁴⁴

The last argument against a national RPS is that state flexibility offers a more effective approach to renewables than a national policy would. Flexibility forsakes economies of scale and underestimates the value of standardization among electricity generators and providers who serve more than one state. Too much flexibility can lead to ineffective policies, such as those adopted by Portugal and Greece, countries who are not on track to meet the E.U. targets because their policies were ineffective.¹⁴⁵ An E.U.-level policy that utilized effective means like those implemented in other member states would have kept Portugal and Greece on track to meet the targets.

States alone cannot adequately address the need for increased renewable energy. The Energy Information Administration projects that, considering all of the state programs and the federal incentives in place, non-hydro power renewables will account for only 3.6% of total generation in 2030.¹⁴⁶ When you factor in traditional hydropower, the number swells to 9%¹⁴⁷ Considered in light of the E.U.'s target of 21% renewably gener-

142. Ralls, *supra* note 140, at 456, 460.

143. *See supra* text accompanying note 10 for electricity source statistics.

144. Kevin L. Doran, *Can the U.S. Achieve A Sustainable Energy Economy from the Bottom Up? An Assessment of State Sustainable Energy Initiatives*, 7 N.T. ENVTL. L. 1, para 40, 43 (page uncertain) 2005/2006.

145. *Communication from The Commission to the Council and the European Parliament, The Share of Renewable Energy in the EU* COM(2004) 366 final. Brussels May 26, 2004 at 14.

146. Energy Info. Admin, Annual Energy Outlook 2007: Electricity Forecast, 86, available at <http://www.eia.doe.gov/oiaf/aeo/index.html>. Including traditional hydropower, renewable fuels provide 9% of U.S. electricity in 2030. *Id.*

147. *Id.*

ated electricity by 2030, the numbers alone indicate that the state policies and the minimal federal policies currently in place are not enough to keep the United States competitive in the renewable energy market, much less to tackle the pollution and global warming problems that accompany traditional electricity generation.

Although renewable portfolio standards are relatively new, the United States can learn from successful state programs and other nations when it implements a national RPS program. It is time to transfer the lessons gained in the states' fertile laboratories¹⁴⁸ and from other countries to implement a federal policy that exploits the sun, wind, biomass, geothermal and other resources of the United States to generate electricity.

C. *Lessons from the States and Nations Who Have Implemented Renewable Policies*

Four main lessons emerge from the renewable policies analyzed in this paper. First, keep the policy simple. Texas and Australia have simple renewable portfolio systems with clear rules and a streamlined administrative process. Second, the REC trading program is an essential component of any cost effective RPS. Third, the goal percentage of an RPS should be an ambitious, but accomplishable, goal that increases and stretches sufficiently into the future to guarantee the market stability necessary to attracting private investment to renewables. This will encourage long term contracts that allow renewable generators to access capital and loans for technology development, making renewables more likely to be cost-competitive without future policy support. The final lesson comes from the approaches taken by the E.U. and Australia. These nations highlight how renewable technology to generate electricity creates economic opportunities. Although, admittedly, environmental and security concerns also motivated these nations to implement renewable portfolio standards, Australia's policy, in particular, makes it clear that policies that promote renewable energy drive innovation and economic prosperity. This positive approach, highlighting job and economic opportunities within renewable fuel generated electricity, will make the RPS standards more attractive to the nation.

148. Kevin L. Doran, *Can the U.S. Achieve A Sustainable Energy Economy from the Bottom Up? An Assessment of State Sustainable Energy Initiatives*, 7 VT. ENVTL. L. 1, para 40, 43 (page uncertain) 2005/2006, referring to J. Brandeis's oft quoted reference to the state's role in the federal system.

Renewable energy and the policies that support it are investments in the future that will make the United States more secure, more competitive, more innovative, and better stewards of its resources while building the economy and ensuring that electricity will remain uninterrupted.

The European Union's policies require member states to promote innovation and diversification in their electricity portfolio so as to prevent global warming, promote sustained economic growth in the E.U. and decrease E.U.-wide reliance on fuel imports. The United States does not have the same directive powers as the E.U., so it cannot require its states to implement policies to promote renewable energy. The U.S. must use its regulatory powers to promote renewable electricity across diverse states.

D. Implementing These Lessons to Promote Renewable Energy Throughout the United States

The opportunity for economically fruitful innovation, along with the need to address significant environmental concerns by developing renewable sources of electricity, mandate federal action. In order to compete with international innovation, and to responsibly maintain the U.S.'s electricity-intensive standard of living, the federal government must implement a national renewable portfolio standard.

The United States government does not have powers similar to the European Union's directive whereby it can set a goal for the states and require the state governments to implement and enforce laws to accomplish the federal goal. Congress's Commerce Clause power does enable it to regulate the electricity industry throughout the country, but "the Federal Government may not compel the States to enact or administer a federal regulatory program."¹⁴⁹

Congress could encourage the states to create policies that promote renewable energy by utilizing its Spending Clause powers, or by requiring the states to implement an RPS if the states choose to regulate utilities. But a national RPS policy will better support renewable growth throughout the United States.

149. *New York v. United States*, 505 U.S. 144, 188 (1997).

E. *Weaknesses of a Federal Policy that Requires Each State to Implement an RPS*

Although less coercive than the power exercised by the E.U., Congress could make regulations that encourage the states to create RPSs. Congress could either tie federal funding to a requirement that the states create renewable portfolio standards,¹⁵⁰ or provide the states with the option to implement RPSs or not regulate utilities. While Congress cannot directly compel the states to implement an RPS, it can give the state the option of self-regulation before the federal government implements its own laws.¹⁵¹

Funding incentives or choices that encourage state involvement would enable states, which know their resources and culture better than the federal government, to participate in the creation of RPS. But, fifty state-created and controlled RPSs, rather than a single, national, RPS have many weaknesses. First, the national government would be significantly involved in offering the states funding or making them choose whether or not to implement an RPS. If a state refused funding or stopped regulating utilities, the federal government would need to implement and administer an RPS within the state. Yet this federal involvement would not result in the benefits of a common market to spread costs and increase efficiency. Second, the patchwork of RPS standards would require each state to administer its own RPS program, duplicating efforts and reinventing the wheel each time. Third, varying RPS regulations would create inefficiencies for electricity generators that provide electricity across state lines. Fourth, there would need to be some degree of federal quality control so that states do not simply create ineffective RPSs in order to obtain federal funding or to be able to continue to regulate utilities. A national RPS makes more sense than a state-by-state patchwork in order to most efficiently expand renewable electricity generation in the U.S.

150. See *South Dakota v. Dole*, 483 U.S. 203 (1987).

151. See *New York v. United States*, 505 U.S. 144 (1992) for an examination of the issue of when a federal policy gives states a real choice, and when it unconstitutionally crosses the line.

F. *One Direct National RPS Applicable to All Electricity Generators*

In order to most effectively promote renewable energy, the federal government should create a national RPS administered on the federal level that allows for national trading. The United States does not have the same barriers to a national regulation as those that confront an E.U.-level regulation.¹⁵² In fact, the United States has a precedent for using market-based federal regulation to combat environmental concerns, the Clean Air Act's (CAA) sulfur dioxide cap and trade program.¹⁵³

1. The SO₂ Trading Program's Success Argues for a National RPS

The Clean Air Act mandated the sulfur dioxide (SO₂) trading program in order to abate the acid rain that results from sulfur dioxide. Sulfur dioxide is emitted primarily by power plants. The trading program put a cap on the total amount of SO₂ that could be emitted and then allocated a number of pollution credits to each polluter. The polluters tracked their SO₂ emissions. If the polluter did not have enough credits to cover the amount of SO₂ it had emitted, it could obtain credits from another polluter who had emitted less SO₂ than allowed by the credits it held. If the polluter failed to obtain enough credits to cover its emissions, the EPA fined the non-conforming polluter. The SO₂ trading program is widely lauded as a success.¹⁵⁴ The major failure of the SO₂ trading program results from the fact that SO₂ is not a fungible pollutant. When a power plant in California trades its excess credits to a power plant in Nebraska, the states downwind from Nebraska suffer the result of the extra pollutant that the Nebraska plant legally emits under the trading program. For example, the SO₂ that Midwestern coal power plants emit causes harm to downwind states like New York, but the courts have forbidden New York from discouraging the sale of emissions credits to the

152. The E.U. is in the middle of expanding: since adopting the renewable energy directive it has added 12 new member states. In that context the political, regulatory, and connectivity challenges faced by the E.U. in implementing an E.U.-level program are unique to their evolving supra-national government. In contrast, the United States has precedent for implementing nation-wide regulations to address environmental and energy issues.

153. See ZYGMUNT J. B. PLATER, ET AL., ENVIRONMENTAL LAW AND POLICY: NATURE, LAW, AND SOCIETY 1042 (3d ed. 2004), at 712-18 for an overview of the SO₂ cap and trade system.

154. See *id.* at 722.

upwind Midwestern states.¹⁵⁵ The SO₂ trading program's false assumption of fungibility allows power plants in the Midwest to continue to emit SO₂, despite the harm caused in New York. RPSs do not face the problem of false assumptions of fungibility.

Renewable portfolio standards differ from the CAA's cap and trade program in that an RPS creates a guaranteed market for renewable energy rather than capping the harm of a pollutant and therefore does not suffer from the non-fungible harm of the SO₂ program. Further, the RPS systems are encouraging development of renewable energy by mandating a certain level of demand, as represented by the REC credits that each regulated utility must obtain (either through renewable generation, purchase of renewable energy bundled with the REC, or by purchasing an unbundled REC).

The market enlisting cap and trade program demonstrates how policies to reduce sulfur dioxide or increase generation of renewable energy can benefit from a large national market.

2. Advantages of a National RPS

A national RPS with a national REC trading market would benefit renewable energy producers in the nation by allowing them to sell renewable power into more markets than the state where they generate power (given that there is proper connectivity between the states). Even if there is not sufficient transmission capacity to trade power among states, renewable power generators can sell RECs, separated from their power, into markets that they otherwise could not reach due to limitations in the electricity transportation infrastructure.¹⁵⁶

A national standard can catalyze increased growth in renewables in a way that an aggregate of states, each operating within their borders, cannot. The nation can aim for a larger share of electricity coming from renewables than individual states, could even in the aggregate, because of the increased scale. As the European Commission articulated, a larger REC market can stabilize the market for RECs and increase industry's willingness to invest in renewable technologies.

The national market would create an economy of scale that could make it less expensive to meet the overall renewable energy targets. Rather than individual states who each have their

155. *Clean Air Markets Group v. Pataki*, 194 F. Supp. 2d 147 (N.D.N.Y. 2003).

156. State RPSs only create RECs for power metered in the state.

own targets, renewable energy resources, and administrative bodies, the national RPS would consolidate the targets and the administration and tap into all of the nation's renewable resources. This could decrease administration costs, thus making it less expensive to meet the overall targets. For example, rather than nursing enough REC credits from the relatively inefficient biomass that provides most of the renewable energy in a given state to meet its RPS, the state can purchase inexpensive power derived from efficient Texas wind power, rather than the expensive power that would have to be purchased if the state required the REC to come from its less efficient biomass generation. This would reduce overall costs to consumers and encourage efficient producers to generate more electricity by opening a larger market for a generator's RECs.

3. Potential Disadvantages of a National RPS

The standardized federal system and REC market may reward super-efficient resources and lead to diminished investment in other resources that would otherwise have developed into viable, competitive renewable sources, given the investment funds required to innovate. However, markets reward efficiencies. A successful national RPS would seek to increase renewable energy, other than hydropower, at the least cost to the consumer. States that wish to promote their niche renewable industry could provide additional incentives to their strongest renewable energy resource in order to boost its competitiveness in the national market.

4. What Should the National RPS Contain?

Clear rules and straightforward administration are the keys to an effective national RPS. "The regulatory role [of a national RPS] is limited to certifying credits, verifying that generators possess the required number of credits at the end of the year, and imposing a significant penalty for non-compliance."¹⁵⁷ The national goal ought to be increasing and ambitious, while maintaining an achievable goal.¹⁵⁸ Congress should take a cue from the

157. Nancy Rader, *The Mechanics of a Renewables Portfolio Standard Applied at the Federal Level*, American Wind Energy Assoc. Sept. 1997, available at <http://www.awea.org/policy/rpsmechfed.html>.

158. Some advocacy groups, including the U.S. Public Interest Research Groups suggest that the nation should supply 25% of the nation's energy needs by 2025. United States PIRG, *A New Energy Future: The Benefits of Energy Efficiency and*

E.U. and study the current state RPSs to discover what makes the varying standards the most effective. The success of Texas's simple approach should serve as an inspiration for the national policy: clear rules, straightforward mandates, and effective punishments for failure to meet the RPS mandates.

The RPS should remedy the weaknesses contained in the Bingham Amendment. (*See supra* VII, A). It should ensure that the administrative body be as efficient as possible, regulate electricity generators rather than retailers, drive renewable generation of electricity without imposing a cost ceiling, and present the RPS as a strong public investment in America's economy and the future. A national policy should maintain a savings clause whereby the states may implement additional requirements or provide additional incentives to retail providers.

IX.

CONCLUSION

A renewable portfolio standard applied across all states is essential to the future of a stable electricity market in the United States. This national policy is an essential step for our electrical supply, our economy, and our environment.

Renewable portfolio standards begin to combat the problem of global warming while also decreasing the United State's dependence on polluting fossil fuels and allowing the nation to meet the country and the world's growing demand for sustainable electricity.

Many states have begun to experiment with RPSs; Texas's success provides a framework from which the nation may formulate its own. Only a National RPS can properly address the national and international environmental and economic implications of electricity generation.

RPSs utilize market mechanisms to generate consistent demand for renewable energy and allow people, through renewable energy credit trading systems, to meet that demand efficiently. The European Union, Australia and Texas have demonstrated RPS's success. The United States has a clear framework, as well as economic and environmental mandates to pursue a sustainable energy policy that commits the country to support the development of renewable energy.

