

FIRE AND ICE: WORLD RENEWABLE ENERGY AND CARBON CONTROL MECHANISMS CONFRONT CONSTITUTIONAL BARRIERS

STEVEN FERREY*

CHAD LAURENT**

CAMERON FERREY***

*Some say the world will end in fire, Some say in ice . . . And
[either] would suffice.*

—Robert Frost¹

ABSTRACT

Fire and ice will forge the future of the world. The constitutional battle in the United States vis-à-vis global warming will determine the future of fire and ice. The electric sector of the economy holds the key; a fundamental transition to renewable energy is necessary to create a sustainable economy and abate global warming. As of 2009, ten U.S. states are vigorously moving toward implementing a feed-in tariff regulatory mechanism similar to those adopted previously by eighteen

* Professor of Law, Suffolk University Law School. Professor Ferrey has served as primary legal advisor to the World Bank and to the U.N. on global warming and renewable energy policy in developing countries. He is the author of six books on energy and environmental policy including the 2006 book *RENEWABLE POWER IN DEVELOPING COUNTRIES: WINNING THE WAR ON GLOBAL WARMING*, as well as chapters in two recent books on climate change and climate change articles published by Stanford, University of California at Berkeley, Boston College, and New York University.

** Juris Doctor expected May 2009, Suffolk University Law School. Project Consultant with Meister Consultants Group, Inc. in Boston. Former Manager of Renewable Energy Programs at Massachusetts Energy Consumer Alliance. Former Research Associate at Environmental Defense Fund.

*** President of Computers Across Borders, a non-profit NGO distributing computers to schools in developing countries on three continents that operate on renewable energy. See <http://www.computersacrossborders.com>.

1. ROBERT FROST, *EARLY POEMS* 245 (1998).

of the European Kyoto Protocol countries to shift to renewable power technologies. However, these feed-in tariffs could be found to violate the U.S. Constitution and plunge policy over an immovable legal cliff. This article outlines how twenty-seven U.S. states and five European Kyoto Protocol countries employ the constitutionally defensible alternative policy of renewable portfolio standards.

Effectively reducing mounting annual carbon emissions is a profound global challenge. This article compares and contrasts the legality of the two primary means that states use to promote alternative renewable energy technologies so as to minimize carbon emissions: feed-in tariffs and renewable portfolio standards. These methods are analyzed against the Supremacy Clause requirements of the Constitution to determine which could violate existing U.S. law, dooming renewable energy and carbon control efforts. This analysis examines the policy options, their implementation, and what will and will not pass legal challenges.

For a global push against global warming, the ends must not legally be confused with the means. The common goals of reducing the concentration of greenhouse gases cannot be implemented with the same tools under the separate legal systems of the United States and Europe. Getting legal policy right is imperative so that the transition to sustainable development proceeds smoothly and expeditiously and is not stalled in a protracted constitutional challenge.

I. FIRE AND ICE: WHEN RENEWABLES GO LEGALLY RIGHT AND WRONG

We are on the verge of world calamity by fire and ice. The “fire” is climate warming, cranking up the global thermostat to the tipping point of catastrophe. The “ice” is the melting of the polar ice caps—which contain more than ninety percent of the world’s fresh water—in this global flame. Once melted, that fresh water is lost in the ocean brine. As set forth below, the solution must be rapid deployment of renewable resources in lieu of carbon-rich fuels.

However, there is a schism between the needed expedited transition to renewable resources and the requirements of the U.S. Constitution. The attempt by U.S. states to copy the European model of feed-in tariffs to promote renewable power is running afoul of U.S. constitutional requirements. The ten states now launching feed-in tariffs will face the stern hand of the Constitution, which could set back their efforts. The legal gauntlet has already been thrown: In the past year, the first legal challenge to both state Renewable Portfolio

Standards (RPSs) and to state regulation of carbon emissions from power plants has been filed.

This article examines U.S. efforts to reduce greenhouse gas (GHG) emissions, the requirements of law, and the looming legal confrontation between state efforts and the Constitution. Because carbon control is important and urgent, this article suggests alternatives to feed-in tariffs, including RPSs, that escape these legal traps. It examines those legal impediments and charts routes around them to promote renewable power in the United States. It traces legal alternatives to promote rapid deployment of renewable resources in the United States, which may help prevent the world from ending in fire or ice.

A. The Constitutional Backstop

For the past two centuries, the Constitution has limited both good ideas and bad. Even in the interests of abating global warming and promoting renewable energy, the Supremacy Clause of the Constitution remains a legal backstop that may become a barrier. In a federalist system, what the states may do is limited by the Constitution. European nations' penchant for having utilities pay more for renewable power through feed-in tariffs would run afoul of precedent interpreting energy and environmental regulations permissible under the Constitution. How the United States and Europe can attack global warming marks a major legal divide.

Nonetheless, ten states in the United States are now considering the adoption of European-style feed-in tariffs to force electric utilities to pay more for renewable power than for conventional power. This is likely to invoke a confrontation over the Supremacy Clause that will imperil such renewable power initiatives. These constitutional limitations cannot be overcome by passing a state statute. The Constitution remains the ultimate law of the land, and its Supremacy Clause embodies an essential element of the United States' legal construct. A European-style feed-in tariff could be implemented in the United States only via amendments to the Public Utility Regulatory Policies Act (PURPA) and the Federal Power Act (FPA). In the past year, both state RPSs and state regulation of carbon emissions from power plants have been challenged in court.

This article is the first to examine the legal problems with U.S. states' attempts to graft the European system of renewable energy subsidies onto the U.S. system. Section I.B, immediately below, sets forth the fundamental relationship between the conventional

production of electricity and the global threat of GHG-fostered global warming. Section II sets forth the ability of abundant renewable energy resources to abate global warming.

Section III explores regulatory mechanisms for promotion of renewable resources in the United States, including federal tax credits, state system benefit charges, and federal PURPA renewable energy purchase requirements. Section IV goes further, analyzing newly burgeoning state RPSs—now employed in more than half the U.S. states and several European nations, including Sweden, Italy, and the U.K.—and their variations and potentials to promote renewable resources. These RPS programs are the major renewable power incentives used in the U.S. and promise to be addressed in future federal legislation. Section V analyzes the constitutional issues with RPSs, including the Commerce Clause limitations on states and ownership issues.

Section VI introduces European feed-in tariffs, pending feed-in tariff programs in ten U.S. states, and the constitutional barriers to adoption of these programs. Good policy does not always equate with passing legal muster. Key federal court and federal agency decisions interpreting these issues are analyzed. Finally, the “bright line” rearticulated in a recent U.S. Supreme Court decision is examined.

Good ideas—even for renewable power and the abatement of global warming—must be consistent with federal law and the Constitution. Sometimes even good ideas regarding global warming policy are not permissible in the U.S. legal system. The legal systems of European nations and the United States are distinct. What is acceptable in one does not always seamlessly translate legally to the other. Fortunately, the array of other incentives available in the U.S. system, particularly the RPS system now adopted in half the states, remains a legally viable alternative for renewable energy and reduction of GHGs. This article examines all of the legal and policy issues surrounding global warming and renewable energy solutions. We start with the role of electric power in the carbon mix and the emission of GHGs.

B. The Electric Sector and the Solution for Greenhouse Gases

Throughout history, human activities have been both constrained and enhanced by the Earth’s climate. Modern human activities also have the power to change the Earth’s climate. As early as 1896, Arrhenius found that carbon dioxide (CO₂) can affect the climate,

and by 1938, English engineer G.S. Callendar recognized that increases in atmospheric CO₂ were causing a warming trend.² Since the Industrial Revolution, emissions resulting from combusting fossil fuels for mechanical and electrical energy have poured into the atmosphere.³

In 1988, the Intergovernmental Panel on Climate Change (IPCC) was established to study the complex interrelation between human activities and climate.⁴ The IPCC's work appeared on the world media radar in 1995 when its second assessment report found evidence suggesting "that there is a discernible human influence on global climate."⁵ Since 1995 we have seen many of the warmest years on record and dramatic increases in storm intensity and damage.⁶ The effects of dramatic climate change are both numerous and dangerous, including: increased frequency of heat waves and extreme heat events; more intense precipitation events; increased droughts, floods, and monsoons; increased intensity of mid-latitude storms; increased range of tropical disease vectors; and dramatic species extinction events.⁷

In 2007, the IPCC issued its summary report on the effects of global warming, which noted particular impacts on water resources, food production, ecosystems, and human health.⁸ A possible temperature rise of 3°C would leave up to thirty percent of species facing extinction and would decimate the marine coral population.⁹ Food production and crop yields are likely to decrease in lower latitude areas, even if the global temperature increase is small.¹⁰ Crop yields are likely to increase in higher latitudes, even if the

2. Stephen Schneider, *An Overview of the Climate Change Problem* (Feb. 2005) <http://stephenschneider.stanford.edu/Climate/ClimateFrameset.html>.

3. PEW CTR. FOR CLIMATE CHANGE, *CLIMATE CHANGE 101 at 1* (2007), <http://www.pewclimate.org/docUploads/Climate101-Complete-Jan09.pdf>.

4. *See id.*

5. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *IPCC SECOND ASSESSMENT: CLIMATE CHANGE 5* (1995).

6. *See* PEW CTR. FOR CLIMATE CHANGE, *supra* note 3, at 2.

7. *See* Stephen H. Schneider & Janica Lane, *An Overview of "Dangerous" Climate Change*, in *AVOIDING DANGEROUS CLIMATE CHANGE 7* (2006), available at http://stephenschneider.stanford.edu/Publications/PDF_Papers/Schneider-lane.pdf.

8. *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY, CONTRIBUTION OF WORKING GROUP II TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE* (M.L. Parry et al. eds., 2007) available at <http://www.ipcc-wg2.gov/AR5/ar4.html>.

9. *Id.* at 792.

10. *Id.* at 790.

temperature increase is between 1° and 3°C.¹¹ Higher temperatures will also increase the concentration of ground-level ozone, leading to more rapid spread of infectious diseases. Forests will be increasingly affected by pests, disease, and fire, with extended periods of high fire risks and large increases in burned areas.¹² Sea level will rise and coasts will experience more storm surges.¹³ A top official with the IPCC has indicated that developed nations will need to slash CO₂ emissions by 80% to 95% by 2050 to hold GHGs to 450 parts per million in the atmosphere.¹⁴

At the height of the last Ice Age, temperatures were only 5°C cooler than now.¹⁵ Therefore, an increase of the magnitude predicted by the IPCC would be a major move. “Eleven of the past twelve years have been among the warmest dozen years on record”.¹⁶ GHG emissions in the 21st century are mainly a result of power generation.¹⁷ The U.S. Environmental Protection Agency reports that approximately forty percent of aggregate U.S. carbon emissions contributing to climate change are related to coal-fired power generation.¹⁸ The single-point nature of power plant emissions, and the exploding demand for electricity, make electricity-generating plants a logical choice for the regulation of GHG emissions in the United States.

Carbon dioxide is the primary GHG emitted by human activities in the United States, representing approximately 83.9% of total GHG emissions.¹⁹ “The largest source of CO₂, and of overall greenhouse gas emissions, is fossil fuel combustion.”²⁰ Thirty-six percent of that fossil fuel consumption, and in turn roughly forty percent of the CO₂

11. *Id.* at 791–92.

12. *Id.* at 228–29.

13. *Id.* at 792.

14. Mitchell, Rick, *IPCC Official Says Industrialized Nations Must Cut Emissions up to 95 Percent*, 39 ENV'T REP. 1917, 1917 (2008).

15. See J.R. PETIT ET AL., VOSTOK ICE CORE DATA FOR 420,000 YEARS (2001) available at <http://imap.aims.ac.za/~irina/deutVostok.txt>.

16. *Sun in the Clear Over Global Warming*, COSMOS, July 12, 2007, <http://www.cosmosmagazine.com/news/1451/sun-clear-over-global-warming?page=1>.

17. For detailed coverage of the power industry law and regulation, see generally STEVEN FERREY, *THE LAW OF INDEPENDENT POWER* (West Group 2008) (1989).

18. Steven Ferrey, *Corporate Responsibility and Carbon-Based Life Forms*, 35 B.C. ENVTL. AFF. L. REV. 385, 451 (2008).

19. U.S. ENVTL. PROT. AGENCY, *INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2005* at ES-4 (2007).

20. *Id.*

from fossil fuel combustion, is from electricity generators.²¹ “[E]lectricity generators rely on coal for over half of their total energy requirements.”²² Therefore, any successful GHG emission reduction plan will rely on reduction from the electricity sector.

II. THE ABSOLUTE VALUE OF RENEWABLE ENERGY ALTERNATIVES IN THE POWER EQUATION

One of the primary tools in combating increases in GHG emissions from electricity production is to increasing the use of renewable energy resources, many of which have zero net CO₂ emissions, to replace the use of fossil fuel sources for electricity. Even some leaders of the oil industry suggest that fifty percent of total global energy demand could be met by solar, wind, and other renewable resources by 2050.²³ In addition to environmental and climate benefits, a renewable energy economy would have national security benefits by reducing importation of fuels, as well as reducing the vulnerability of the electricity grid to terrorist attack.²⁴

Solar energy is the source of all energy on earth, creating wind and water movement and ultimately creating plants,²⁵ biomass, and animals, which become fossil fuels when their organic matter decays. The surface of the sun emits about 1300 W/m² in the direction of the Earth. One-third of the energy reaching the Earth is reflected back into space by the Earth’s atmosphere, yielding as much as 1000 W/m² at the surface of the Earth at noon on a cloudless day. On average, over the hours of a year, about 170 W/m² of solar radiation reach the Earth’s oceans, and about 180 W/m² reach the land surfaces.²⁶

21. *Id.* at ES-7.

22. *Id.* at ES-8.

23. See JEREMY RIFKIN, THE HYDROGEN ECONOMY: THE CREATION OF THE WORLDWIDE ENERGY WEB AND THE REDISTRIBUTION OF POWER ON EARTH 189 (2002).

24. See ROSS GELBSPAN, BOILING POINT 176 (2004).

25. Plants are a significant source of energy. Photosynthesis is an endothermic reaction requiring 2.8 MJ of solar radiation to synthesize one molecule of glucose from six molecules of CO₂ and H₂O. VACLAV SMIL, ENERGIES: AN ILLUSTRATED GUIDE TO THE BIOSPHERE AND CIVILIZATION 42 (1999). Most of the terrestrial phytomass productivity in storage is in large trees in forests; phytoplankton species in the oceans store this mass in the hydrologic cycle. *Id.* at 46–48. Phytoplankton productions are 65-80% of the terrestrial phytomass total, but phytoplankton has a life span of only one to five days. *Id.* at 48. The most voluminous trees are the most massive life forms on earth, with the most phytomass, and are even larger than blue whales in mass. *Id.* at 51.

26. *Id.* at 5. This results in total solar radiation annually of 2.7×10^{24} joules. *Id.* at 6. This amount of energy reaching the earth in the form of solar radiation is about 8,000 times more than worldwide consumption of fossil fuels and electricity during the early 1990s. *Id.*

“Human capture of this energy is neither efficient nor prodigious. Energy used by humankind on the Earth equals only [about] 0.01% of the total solar energy reaching the Earth.”²⁷ Wind power’s global energy potential is thirty five times greater than world electricity use.²⁸ Every seventy minutes, solar energy provides as much potential energy as humankind uses each year.²⁹

In fact, no nation on Earth uses more energy than the energy content contained in the sunlight that strikes its existing buildings every day. The solar energy that falls on roads in the United States each year contains roughly as much energy content as all the fossil fuel consumed in the world during that same year.

Unlike finite fossil fuels, solar energy represents a constantly replenished flow, rather than an existing stock that is diminished by its use. Tomorrow, the earth will have exactly as much solar energy as it has today, regardless of how much solar energy is used and consumed each day. By contrast, burning a barrel of oil or a cubic meter of natural gas diminishes permanently that quantity of fossil fuels for the next day and for future generations.³⁰

Many renewable energy projects, other than those using biomass fuels, do not involve combustion. “They create mechanical shaft power from the movement of wind or water, tap naturally produced geologic steam, or employ solar energy to induce direct current on a chemical surface.”³¹ “Because renewable energy alternatives – solar, wind, hydro, geothermal – do not involve combustion to produce electric energy, they do not emit various criteria pollutants or GHGs during their operation.”³²

Only location limits solar, wind, and geothermal resources. [While] fossil fuel fired plants can be sited anywhere with appropriate fuel delivery and electricity transmission infrastructure, large renewable power plants can only be sited where renewable sources are present in large enough amounts and concentrations to make the capital investment in generation facilities feasible. But unlike fossil-fuel-fired generation facilities, renewable energy resources are not limited by a finite fuel supply.³³

27. STEVEN FERREY & ANIL CABRAAL, *RENEWABLE POWER IN DEVELOPING COUNTRIES: WINNING THE WAR ON GLOBAL WARMING* 36 (2006).

28. Amory B. Lovins et al., *Forget Nuclear*, 24 *ROCKY MOUNTAIN INST. SOLUTIONS* 1, 25 (2008), available at <http://www.rmi.org/images/PDFs/Newsletter/NLRMIspring08.pdf>.

29. *Id.*

30. FERREY & CABRAAL, *supra* note 27, at 36.

31. Steven Ferrey, *Why Electricity Matters, Developing Nations Matter, and Asia Matters Most of All*, 15 *N.Y.U. ENVTL. L.J.* 113, 134 (2007).

32. *Id.*

33. FERREY & CABRAAL, *supra* note 27, at 37.

What can be critical for renewable resources is adequate transmission capacity from the power generation source to consumers.³⁴ “Electric T&D [transmission and distribution] facilities, telecommunications equipment, and oil and gas pipelines have long lives.”³⁵ “Like a highway grid, once configured, locational and use patterns that grow up around that grid make it more difficult to reroute those electric highways.”³⁶

Renewable technologies must go to the place where they can be exploited. Only in certain locations is the wind regime sufficient to turn large wind turbines; hydro power is limited to moving water courses; solar photovoltaic power, while ubiquitous, requires a large land or surface area to produce the equivalent amount of power as a large fossil fuel-fired facility (solar power is much less dense than fossil fuels – although solar collectors can be mounted on [sic] roofs or walls, or have dual uses, *e.g.*, functioning as both a roof and electricity generator).³⁷

According to a 2007 report from the United Nations Environment Programme, investment capital flowing into renewable energy worldwide climbed from \$80 billion in 2005 to \$100 billion in 2006.

Despite the emergence of, and attention to, renewable energy sources . . . , forecasters do not see the international mix of power generation sources changing appreciably over the next several decades [T]he percentage of fossil fuels in the mix—and thus the potential sources of GHGs in the electric power sector—are forecasted to remain relatively constant. The International Energy Agency in Paris forecasts that by 2030, world demand for energy will grow by 59% and fossil fuel sources will still supply 82% of the total, with non-carbon renewable energy sources supplying only 6%.³⁸

In response to this growing awareness, and due to the lack of United States federal regulations relating to climate change and renewable energy, states are developing their own aggressive incentives for renewable energy production.³⁹

Solar photovoltaic panels are most likely to generate power during peak times of the day when summer air conditioning demand is greatest. According to one source, a few hundred additional

34. FERREY, *supra* note 17, § 2:11.

35. FERREY & CABRAAL, *supra* note 27, at 23.

36. *Id.*

37. *Id.* at 23–24.

38. Steven Ferrey, *Power Paradox: The Algorithm of Carbon and International Development*, 19 STAN. L. & POL’Y REV. 510, 518 (2008).

39. See Steven Ferrey, *Power Future*, 15 DUKE ENVTL. L. & POL’Y F. 261, 284–87 (2005).

megawatts (MW) of photovoltaic generation located in or around each major metro area might have prevented the August 14, 2003 blackout of the East Coast.⁴⁰ The United States could tap 900,000 MW of off-shore wind potential, much of it near urban areas along the Eastern seaboard, according to a U.S. Department of Energy report.⁴¹ The European Union forecasts that the Union will have at a minimum 40,000 MW of off-shore wind energy in place in the European Union by the year 2020.⁴²

Although renewable resources are distributed across the United States and the world, they are not distributed evenly. “Nine states east of the Mississippi River do not have any sub-regions with high wind resources [S]ix states ranging from Virginia to Massachusetts . . . do not have any sub-regions with at least 250,000 metric tons of currently available biomass [annually].”⁴³ The northeastern region of the United States has relatively dense populations and significant electricity demand. Although they have access to renewable resources, those renewable resources are not as concentrated as in other areas of the United States. Absent the ability to generate energy on their own, urban areas are left with energy efficiency as a substitute for additional generation capacity that they require on a net basis.⁴⁴

III. INCENTIVE MECHANISMS TO FACILITATE RENEWABLE POWER

Where renewable energy resources do exist, their deployment can be incentivized in a variety of ways. Primarily, aside from global warming reduction requirements, these incentives include tax credits,

40. Steven Letendre & Richard Perez, *Understanding the Benefits of Dispersed Grid-Connected Photovoltaics: From Avoiding the Next Major Outage to Taming Wholesale Power Markets*, ELECTRICITY J., July 2006, at 64, 68.

41. U.S. DEPT. OF ENERGY, GENERAL ELECTRIC, AND MASSACHUSETTS TECHNOLOGY COLLABORATIVE, A FRAMEWORK FOR OFFSHORE WIND ENERGY DEVELOPMENT IN THE UNITED STATES 2 (2005), available at http://www.masstech.org/offshore/final_09_20.pdf.

42. 40,000 MW by 2020: Building offshore wind in Europe, Renewableenergyworld.com, Jan./Feb. 2008, <http://www.renewableenergyworld.com/rea/news/reworld/story?id=51595>.

43. Marilyn A. Brown et al., *Reduced Emissions and Lower Costs: Combining Renewable Energy and Energy Efficiency into a Sustainable Energy Portfolio Standard*, ELECTRICITY J., May 2007, at 62, 64. These resources count agricultural residues, crops, animal manure, wood residues, municipal discarded materials and methane from landfill, as well as dedicated crop biomass. *Id.* at 64 n.9. With the exception of Florida, the eastern half of the United States is devoid of sub-regions capable of producing 6.0 kWh/m²/day with solar photovoltaic resources on south-facing structures and surfaces. *Id.* at 64.

44. See generally MARILYN A. BROWN ET AL., TOWARDS A CLIMATE-FRIENDLY BUILT ENVIRONMENT (2005).

renewable trust funds, renewable portfolio standard requirements, and promotional feed-in tariffs paid for the sale and delivery of renewable energy.

A. Tax Credits

In the United States, the Production Tax Credit (PTC) set forth in section 45 of the Internal Revenue Code remains the cornerstone of federal policies supporting renewable energy.⁴⁵ The PTC was originally enacted as part of the Energy Policy Act of 1992 and has been periodically extended, with each extension lasting only for a limited period.⁴⁶ Qualified facilities (QFs) are wind, closed-loop biomass, open-loop biomass, geothermal, small irrigation power, municipal solid waste, and qualified hydropower facilities.⁴⁷ In 2006, the amount of the credit was \$0.019 per kilowatt hour (kWh) generated by wind, closed-loop biomass, geothermal and solar⁴⁸ energy facilities, and \$0.01 per kWh for open-loop biomass, small irrigation power, landfill gas, trash combustion and qualified hydropower facilities.⁴⁹ The PTC applies for ten years for wind and closed loop biomass and open-loop biomass built after August 8, 2005 and five years for other QFs following the date that the QF was originally placed in service. Despite the importance of the PTC, renewable power is additionally encouraged in certain states by other significant tax incentives.⁵⁰

45. 26 U.S.C. § 45 (2006).

46. The Tax Relief and Health Care Act of 2006 extended the PTC to qualified facilities placed in service before January 1, 2009. Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432, § 201, 120 Stat. 2922, 2944.

47. The PTC also applies to refined coal. 26 U.S.C. §§ 45(c)(7), (d)(8), (e)(8) (2006).

48. Section 710 of The American Jobs Creation Act of 2004 extended the PTC to open-loop biomass, geothermal energy, solar energy, small irrigation power, and municipal solid waste facilities. American Jobs Creation Act of 2004, Pub. L. No. 108-357, § 710, 181 Stat. 1418, 1552-57. The Energy Policy Act of 2005 extended the PTC to facilities placed in service before January 1, 2008, but the in-service date for solar energy facilities was not extended, and remains January 1, 2006. Energy Policy Act of 2005, Pub. L. No. 109-58, § 1301, 119 Stat. 594, 986 (2005).

49. I.R.S. Notice 2006-51, 2006 IRB LEXIS 353, 2006-25 I.R.B. 1144, at *11-12 (June 19, 2006).

50. According to the Department of Energy Funded Database of State Incentives for Renewables & Efficiency (DSIRE), twenty-six states offer some type of solar energy tax incentive with over 51 different types of programs. Overall there are 228 different types of rebates available in the states for renewable energy. See Rusty Haynes, N.C. Solar Center, N.C. State University Solar America Cities Annual Meeting (April 15, 2008) (transcript available at <http://www.dsireusa.org/solar/library>).

Many European countries also use tax subsidies to promote renewable power development. For example, in Sweden, the value of financial subsidies to wind projects is approximately \$0.025 per kWh.⁵¹

B. System Benefits Charges/Renewable Trust Funds

A system benefits charge (SBC) is a tax on utility consumption, or a surcharge mechanism, for collecting funds from electric consumers, the proceeds of which then support a range of energy activities. In order to support demand-side management programs, or renewable resources, a system benefits charge is used to inconspicuously collect funds, which then support a range of energy activities, from electricity consumers⁵² so that those technologies can compete in price with more conventional technologies.⁵³

Between 1998 and 2012, approximately \$3.5 billion will be collected by the original fourteen states with existing renewable system benefit charges to endow energy trust funds. More than half the amount collected—at least \$135 million per year—comes from California alone.⁵⁴ As of 2006, state's energy trust funds had committed almost \$400 million to support 2249 MW of renewable energy capacity.⁵⁵ Most of these state programs only provide financial assistance to new projects, to the exclusion of existing renewable projects prior to program implementation.⁵⁶ Approximately half of this capacity had been constructed, while the other half was in the development stage.⁵⁷ “The funding levels [of these state charges on electric distribution] range from \$0.07 per MWh in Wisconsin up to

51. A. Kovski & J. Fordney, *Specialist Detail Essentials For Renewables: Subsidies, Mandates And More Transmission*, PLATTS ELECTRIC UTIL. WEEK, Mar. 10, 2008 at 7, 8.

52. FERREY, *supra* note 17, § 10:95.

53. *Id.*

54. Steven Ferrey, *Renewable Orphans: Adopting Legal Renewable Standards at the State Level*, ELECTRICITY J., Mar. 2006, at 52, 53.

55. M. BOLINGER & R. WISER, THE IMPACT OF STATE CLEAN ENERGY FUND SUPPORT FOR UTILITY-SCALE RENEWABLE PROJECT 2 (May 2006), available at <http://eetd.lbl.gov/ea/EMS/cases/LBNL-56422.pdf>.

56. Ferrey, *supra* note 54, at 53.

57. See BOLINGER & WISER, *supra* note 55, at 7.

almost \$0.6 per MWh in Massachusetts.”⁵⁸ The mean value is about \$0.01 per kWh of consumption.⁵⁹

The form of administration of renewable trust funds varies. Many states administer them through a state agency, while others use a quasi-public business development organization. Some funds are managed by independent third-party organizations, some by existing utilities, while two states allow large customers to self-direct the funds. For distribution, some states utilize an investment model, making loans and equity investments. Other states provide financial incentives for production or grants to stimulate supply-side development. Some other states use research and development grants, technical assistance, education, and demonstration projects.⁶⁰

As of 2001, the only state program to provide assistance to entities outside of the state with its trust funds was Rhode Island, which provided a grant to a wind project in Massachusetts that was in danger of losing its construction permits. It is reported that Connecticut, Massachusetts, and Pennsylvania have expressed a willingness to fund out-of-state projects. In critiquing these projects and the hesitancy of the majority of states to fund out-of-state projects, two different federally funded national energy research laboratories highlight this only as a practical concern. In fact, there are significant legal issues raised by such taxation of interstate electricity sales to fund exclusively in-state renewable energy projects.⁶¹

Table 1 provides an illustration of these state programs in the Northeast.

58. Steven Ferrey, *Sustainable Energy, Environmental Policy, and States' Rights: Discerning the Energy Future through the Eye of the Dormant Commerce Clause*, 12 N.Y.U. ENVTL. L.J. 507, 524 (2004).

59. MARTIN KUSHLER, ET AL., FIVE YEARS IN: AN EXAMINATION OF THE FIRST HALF-DECADE OF PUBLIC BENEFIT ENERGY EFFICIENCY POLICIES 10, AM. COUNCIL FOR AN ENERGY-EFFICIENT ECON. REP. NO. U041, April 2004.

60. Ferrey, *supra* note 58, at 524–25.

61. *Id.* at 640.

Table 1: Seven Northeast State Public Benefits Funding Renewable Projects		
State	Funding	Renewables Uses and Eligibility
Connecticut	0.5 mills/kWh in 2000 ⁶² 0.75 mills in 2002 1 mill in 2004 - \$28 million/year average through 2012 Fund reduced by approx. 33% in FY04 and for next 7 years to pay back bonds issued to cover state budget deficit.	Solar, wind, ocean thermal, wave, tidal, landfill gas, low emission biomass, fuel cells. Economic development and renewables for customers. May invest in out-of-state renewable projects.
Massachusetts	Averages 0.95 mills/kWh first 5 years = \$40 million per year. 0.25 mills dedicated for MSW pollution controls or retirement. 0.5 mills thereafter (no MSW) ~\$20-\$25 million/year.	New solar, wind, ocean, advanced biomass, fuel cells, possibly DSM and distribution generation.
New Jersey	1.8 mills/kWh for energy efficiency and Class I renewables for first 4 years; 2.1 mills/kWh next 4 years (min. of \$107.5 million/yr through 2008). 75% of funds for efficiency \$9~105 million/yr avg) 25% of funds for Class I renewables (~\$35 million/yr avg) 2001 BPU Order sets initial 3 year (2001-2003) funding level at \$358.5 million (75% for efficiency, 25% of Class I renewables).	Class I renewables (wind, PV, solar thermal, biomass, fuel cells, LFG, wave/tidal, and geothermal.) Allocation of renewable energy funds is 60% customer sites, 40% grid supply in 2001, and split 50/50 each year thereafter.
New York	0.6 – 1.0 mills/kWh per utility; avg. ~0.7 mills ~\$78 million/yr for 3 years (1999-2001) Efficiency = 67%; renewables/R&D = 18%; low-income = 14% \$17 million over three years for renewables (including \$4 million from Niagara Mohawk) Fund extended at \$150 million/yr for 5 years. \$70 million over 5 years for renewables, including \$47.5 million for	Wind, solar, biomass. Competitive bidding by technology. Funding programs include grants, loans, guarantees, investments, buy downs, and rebates.

62. A mill is one-tenth of one cent.

State	Funding	Renewables Uses and Eligibility
	wind power, and the rest for biomass and solar.	
Rhode Island	2.3 mills/kWh 1997-2012, (2.0 mills/kWh for DSM programs and 0.3 mills/kWh for renewables) ~\$17 million/yr, with 2.5 million/yr for renewable	Wind, solar, sustainable, biomass, existing hydro 100 MW or less.

As Table 2 illustrates, the funding level is in the range of \$175 to \$250 million annually for the cumulative impact of the fourteen state renewable energy system benefit charge and trust fund programs.⁶³ “While many of these programs are set up to run indefinitely, others have set life-spans. The level of per capita funding ranges from \$0.90–\$4.40 annually for renewable energy. Expressed another way, for each megawatt hour sold in the state, the level of subsidy ranges from \$0.07–\$0.59.”⁶⁴

State	Approximate Annual Funding (\$million)	Per-Capita Annual Funding	Per-MWh Funding	Funding Duration
CA	\$135	\$4.0	\$0.58	1998 - 2011
CT	\$15 - \$30	\$4.4	\$0.50	2000 - indefinite
DE	\$1 (maximum)	\$1.3	\$0.09	10/1999 - indefinite
IL	\$5	\$0.4	\$0.04	1998-2007
MA	\$30 - \$20	\$4.7	\$0.59	1998 - indefinite
MT	\$2	\$2.2	\$0.20	1999 - July 2003
NJ	\$30	\$3.6	\$0.43	2001-2008

63. *Id.* at 525.

64. *Id.*

65. *Id.* at 526–27.

NM	\$4	\$2.2	\$0.22	2007 - indefinite
NY	\$6 - \$14	\$0.7	\$0.11	7/1998 - 6/2006
OH	\$15 - \$5 (portion of)	\$1.3	\$0.09	2001 - 2010
OR	\$8.6	\$2.5	\$0.17	10/2001 - 9/2010
PA	\$10.8 (portion of)	\$0.9	\$0.08	1999 - indefinite
RI	\$2	\$1.9	\$0.28	1997 - 2002
WI	\$1 - \$4.8	\$0.9	\$0.07	4/1999 - indefinite

C. PURPA Renewable Power Purchase Obligations

Congress enacted the Public Utility Regulatory Policies Act of 1978 (PURPA) as part of a legislative initiative “designed to combat the nationwide energy crisis.”⁶⁶ Even though PURPA was somewhat restricted by changes in federal law in 2005, its requirement that regulated retail utilities purchase renewable power from QFs, was and remains a primary incentive for renewable power development.⁶⁷ In an effort to reduce United States consumption of fossil fuels and reliance on foreign energy supplies, Congress sought to promote the development of alternative energy sources, including cogeneration and small power production.⁶⁸ Prior to PURPA, an independent cogenerator or small power producer seeking to interconnect with an electric utility confronted at least three primary obstacles:⁶⁹

- Some utilities used their monopoly power to refuse to purchase electric power generated by such sources, and refused to interconnect with the facility, or offered the QF inadequate prices for a purchase.⁷⁰

66. F.E.R.C. v. Mississippi, 456 U.S. 742, 745 (1982).

67. 16 U.S.C. § 824a-3 (2006).

68. See Steven Ferrey, *Exit Strategy: State Legal Discretion to Environmentally Sculpt the Deregulated Electric Environment*, 26 HARV. ENVTL. L. REV. 109, 129–33 (2002).

69. See Steven Ferrey, *Nothing But Net: Renewable Energy and the Environment, MidAmerica Legal Fictions, and Supremacy Doctrine*, 14 DUKE ENVTL. L. & POL'Y F. 1 (2003).

70. Steven R. Miles, *Full-Avoided Cost Pricing Under the Public Utility Regulatory Policies Act: “Just and Reasonable” to Electric Consumers?*, 69 CORNELL L. REV. 1267, 1267 (1984).

- Some utilities charged those entities that cogenerated discriminatory rates for supplementary, back-up, and maintenance service.⁷¹
- Federal and state laws posed a problem for an interconnected cogenerator or small power producer [QF] in that it could subject itself to plenary public utility regulation, under either the Federal Power Act and/or the Public Utility Holding Company Act.⁷²

The purpose of Congress in enacting PURPA section 210 was to eliminate these obstacles.⁷³ Under PURPA, if a power generation project satisfies specified legal requirements, it is characterized as a QF and is entitled to regulatory benefits.⁷⁴ A QF produces electric energy solely by the use of biomass, waste, renewable resources, geothermal resources or any combination thereof, and is not greater in gross capacity than eighty megawatts unless it also cogenerates power.⁷⁵

PURPA requires that the Federal Energy Regulatory Commission (FERC) establish regulations that obligate public utilities to sell electric energy to and purchase power from QFs [at nondiscriminatory prices]. PURPA also specifies that the rates established by FERC for these purchases may not exceed the “incremental cost” to the utility of purchasing alternative electric energy. This “incremental cost” is defined as the cost to the electric utility of the electric energy which, but for the purchase from such [QF], such utility would generate or purchase from another source.⁷⁶

Electric utilities must offer to sell necessary backup,⁷⁷ interruptible,⁷⁸ maintenance,⁷⁹ or supplemental⁸⁰ power to QFs.

71. *Id.*

72. *Id.*

73. *Id.* at 1268–69.

74. Ferrey, *supra* note 68, at 136–42.

75. 16 U.S.C. § 796 (2006).

76. *Plymouth Rock Energy Assocs. v. Dep’t of Pub. Utils.*, 648 N.E.2d 752, 754 (Mass. 1995) (quoting 16 U.S.C. § 824a-3(d)) (citations omitted); *see also* Ferrey, *supra* note 68, at 138–41.

77. Backup power is electric energy or capacity during an unscheduled outage to supply power and is generally self-generated. 18 C.F.R. § 292.101(b)(9).

78. Interruptible power is power or capacity supplied by an electric utility to a QF subject to interruption under specific conditions. 18 C.F.R. § 292.101(b)(10).

79. Maintenance power is power or capacity supplied by an electric utility to a QF during periods of scheduled outages. 18 C.F.R. § 292.101(b)(11).

PURPA requires that such power sales by an electric utility to a QF be nondiscriminatory and “just and reasonable and in the public interest.”⁸¹ Essentially, there must be a cost basis and fair justification for any QF power sale activity that is inconsistent with economic principles.

Commentators argue that QF buyback rates calculated under the PURPA avoided-cost principal are not adequate since the wholesale power buyback rates “capture only a fraction” of the environmental and distributed benefits of deployment of the technology to society.⁸² They argue that at a minimum, buy-back rates should be calculated based on the full value to society, including energy, capacity value, and distribution system value or “total facility avoided cost.”⁸³

The Energy Policy Act (EP Act) of 2005⁸⁴ added section 210(m) to PURPA, which permits the termination of an electric utility’s obligation to purchase energy from QFs if FERC finds that the QF has nondiscriminatory access to wholesale electric markets.⁸⁵ If FERC finds that the QF has non-discriminatory access, it would eliminate “the QF purchase mandate for utilities operating in the organized markets that have so-called ‘Day 2 markets’ —MISO, ISO-New England, PJM, and NYISO—because they offer transparent spot markets into which all generators can sell” power.⁸⁶ FERC

80. Supplementary power is power or capacity supplied by an electric utility to a QF to augment self-generated electricity. 18 C.F.R. § 292.101(b)(8).

81. 18 C.F.R. § 292.305(a).

82. AMORY B. LOVINS ET AL., *SMALL IS PROFITABLE: THE HIDDEN BENEFITS OF MAKING ELECTRICAL RESOURCES THE RIGHT SIZE* 331–32 (2002).

83. *See id.*

84. Pub. L. No. 109-58, § 1253, 119 Stat. 594 (codified at 16 U.S.C. § 824a-3 (2006)).

85. PURPA 210(m)(1) sets out the following criteria for non-discriminatory markets:

(A)(i) independently administered, auction-based day ahead and real time wholesale markets for the sale of electric energy; and (ii) wholesale markets for long term sales of capacity and electric energy; or

(B)(i) transmission and interconnection services that are provided by a Commission-approved regional transmission entity and administered pursuant to an open access transmission tariff that affords nondiscriminatory treatment to all customers; and (iii) competitive wholesale markets that provide a meaningful opportunity to sell capacity, including long-term and short-term and real-time sales to buyers other than the utility to which the qualifying facility is interconnected. In determining whether a meaningful opportunity to sell exists, the commission shall consider, among other factors, evidence of transactions within the relevant market; or

(C) wholesale markets for the sale of capacity and electric energy that are, at a minimum, of comparable competitive quality as markets described in subparagraphs (A) and (B).

16 U.S.C. § 210(m)(1) (2006).

86. Andrea Robinson, Proposed Rule Would End PURPA “Put” in Some Power Markets, Jan. 24 2006, <http://www.energylegalblog.com/archives/2006/01/24/1602>.

regulations provide that in Day 2 markets there is a rebuttable presumption that a QF with a capacity above 20 MW has non-discriminatory access to a wholesale market as defined in PURPA section 210(m)(1)(A).⁸⁷ An electric utility member of a Day 2 market must file an application with FERC for relief from the purchase requirement.⁸⁸

On January 19, 2006, FERC issued a notice of proposed rulemaking.⁸⁹ On October 20, 2006, FERC issued Order No. 688 as a Final Rule to implement PURPA section 210(m).⁹⁰ This order found that five Regional Transmission Organizations (RTOs) afforded non-discriminatory market access to QFs and placed the burden on the QFs in these five RTO areas to demonstrate that the market does not afford them non-discriminatory access in order to maintain their power purchase entitlements. In Order 688, FERC found that

Midwest Independent Transmission System Operator (Midwest ISO), PJM Interconnection, L.L.C. (PJM), ISO New England, Inc. (ISO-NE), and New York Independent System Operator (NYISO) qualify as markets [with non-discriminatory access] described in § 292.309(a)(1)(i) and (ii), and there is a rebuttable presumption that qualifying facilities with a capacity greater than 20 megawatts have nondiscriminatory access to those markets through Commission-approved open access transmission tariffs and interconnection rules, and that electric utilities that are members of such regional transmission organizations or independent system operators (RTO/ISOs) should be relieved of the obligation to purchase electric energy from the qualifying facilities.⁹¹

In May 2007, FERC ruled that QF obligations were no longer to be imposed on utilities owned by Duke Energy in the Midwest under the Energy Policy Act of 2005.⁹²

87. 18 U.S.C. § 292.310 (2006).

88. *Id.*

89. New PURPA 210(m) Regulations Applicable to Small Power Cogeneration Facilities, 71 Fed. Reg. 4532 (proposed Jan. 27, 2006) (to be codified at 18 C.F.R. pt. 292).

90. New PURPA 210(m) Regulations Applicable to Small Power Cogeneration Facilities, 71 Fed. Reg. 64,342 (final rule) (issued Oct. 20, 2006) (to be codified at 18 C.F.R. pt. 292), *aff'd on appeal*, *Am. Forest & Paper Ass'n v. Fed. Energy Regulatory Comm'n*, 550 F.3d 1179 (D.C. Cir. 2008).

91. 18 C.F.R. § 292.309(e) (2009). FERC also found that the California Independent System Operator and the Southwest Power Pool satisfy the criteria for transmission and interconnection services provided by an approved RTO and administered pursuant to open-access transmission tariff affording nondiscriminatory treatment. 18 C.F.R. § 292.309(g) (2009). FERC also found that ERCOT is a market of comparable competitive quality to Midwest ISO, PJM, ISO-NE and NYISO. 18 C.F.R. § 292.309(f) (2009).

92. *In re Duke Energy Shared Servs. Inc.*, 119 F.E.R.C. ¶ 61,146 (May 17, 2007).

The burden will be on the utility to demonstrate that the small QF has non-discriminatory access to the market.⁹³ By contrast, PURPA section 210(m) and FERC Order No. 688 do not modify the “rights or remedies of any party under any contract or obligation, in effect or pending approval before the appropriate state regulatory authority on non-regulated electric utility on or before August 8, 2005.”⁹⁴ If FERC determines that in 2006 or later, QFs have non-discriminatory market access, they are allowed to relieve utilities of the QF power purchase obligation. Having open access to the spot markets in RTOs does not necessarily mean that there is access to long-term markets on a non-discriminatory basis.

IV. RENEWABLE PORTFOLIO STANDARDS AS THE STATE ELIXIR

A. RPS Design and Contours

An alternative to feed-in tariffs is state mandatory minimum renewable energy supply requirements, which are usually imposed on electric utilities or independent retail suppliers. These alternatives typically are known as Renewable Portfolio Standards (RPSs).

“A resource portfolio requirement requires certain electricity sellers and/or buyers to maintain a predetermined percentage of designated clean resources in their wholesale supply mix.”⁹⁵ Contrary to SBCs, RPS programs transfer the risks and benefits of achieving a percentage of renewables to the private sector. “The key to making the portfolio requirements work is to establish trading schemes for ‘portfolio obligations.’”⁹⁶ “The standards become self-enforcing as a condition of retail sale licensure.”⁹⁷ “The advantage[] of a portfolio standard is that it does not subsidize any particular technology or locus of that technology.”⁹⁸ “Resource portfolio requirements can be applied under any wholesale or retail competition, without placing any entities at a disadvantage.”⁹⁹

State RPS program designs vary as to

- Energy versus capacity obligations;
- Single-tier or multi-tier credit determinations;

93. 18 C.F.R. § 292.309(d) (2009).

94. 18 C.F.R. § 292.314 (2009).

95. Ferrey, *supra* note 58, at 529.

96. *Id.* at 530.

97. *Id.*

98. *Id.* at 530–31.

99. *Id.* at 531.

- Duration of purchase obligations;
- Requirements for resource diversity;
- Incentives for resource or technology diversity;
- Participation requirements for default service providers;
- Geographic eligibility for credits;
- Differentiation by type of renewable resource;
- Rules governing which generation units can earn credits;
- Definitions of new or incremental generation, where applicable;
- Categorization of multi-fuel facilities and off-grid resources; and,
- Eligibility of customer-side distributed generation.

Half of the U.S. states have enacted RPS programs to promote renewable energy power production. Half of that half employ differentiated tiers of Renewable Energy Credits or Certificates (RECs).¹⁰⁰ Some states distinguish tiers of RECs by the year in which the REC was created¹⁰¹ or the type of renewable resource used in creation of the REC, so as to promote certain technologies.¹⁰² Some states create technology set-asides or bands of technology.¹⁰³ Other states have only a single type, or tier, of REC regardless of the technology used to create the REC, with only newly constructed renewable energy projects permitted to sell RECs.¹⁰⁴ Other states

100. RECs are a regulatorily-created embodiment of the renewable attribute of a unit of electric power generation. Typically representing one megawatt-hour of power generation from a renewable or alternative electric power generation source, as defined in state law, that registers with a particular state to simultaneously create such RECs as an additional element of its generation. These RECs, after creation, are sold to retail electricity sellers in the state, which are required each year to have a designated percentage of their power to be generated by such renewable or alternative technologies. As a condition on the supply of power at retail, Renewable Portfolio Standards, that create RECs, impose requirements on retail suppliers of power, as a mechanism to subsidize the construction of new renewable generating sources. These subsidies do not have to be funded with tax monies, but instead become largely invisible increases in the cost of electric power, which are passed on in higher rates to consumers of this essential product or service.

101. Rhode Island and Delaware (partially) have such systems. Database of State Incentives for Renewables & Efficiency, Rules Regulations & Policies for Renewable Energy, <http://www.dsireusa.org/summarytables/rrpre.cfm> (last visited Dec. 2, 2009).

102. Such states include Connecticut, Maryland, New Jersey, Washington DC, and Texas (partially). *Id.*

103. Arizona, Colorado, Minnesota, Montana, Nevada, New Jersey, New York, Pennsylvania and Washington DC are examples of this. *Id.*

104. Iowa, Massachusetts, Montana (for out-of-state projects) and the Minnesota program covering XCEL are examples of this. *Id.*

have a single tier that allows both new and existing projects to qualify.¹⁰⁵ This creates myriad variations on state RPS models.

B. RPS State Variations and Results

RPS programs exist in twenty-five states and the District of Columbia; four more states have nonbinding RPS goals.¹⁰⁶ “In 2007, four states established new RPS policies, eleven states significantly revised pre-existing RPS programs . . . and three states created non-binding renewable energy goals.”¹⁰⁷ These mandatory RPS programs cover forty-six percent of nationwide retail electricity sales.¹⁰⁸ RPS programs were initially created in states that had restructured and/or deregulated their retail power markets; however, over time, half of the RPS programs were being created in traditional monopolized states. Representative northeast state RPS programs are illustrated in Table 3.

The evolution of RPS programs occurred over the past fifteen years. Iowa and Massachusetts established renewable portfolio standards in 1991 and 1997, respectively.¹⁰⁹ By the end of 2007, more than twenty-five states and the District of Columbia had enacted RPS policies requiring that over time, between two and forty percent of electricity come from renewable energy sources.¹¹⁰ Among the most populous states, California has a thirty-three percent RPS target by 2020 and New York has a twenty-four target by 2013.¹¹¹

The RPS programs in the states are very different in terms of what qualifies as a renewable resource. Most states allow solar, wind, biomass, and landfill gas resources to qualify in RPS programs; however, states are less consistent regarding eligibility for biogas, MSW, geothermal, all hydro resources, fuel cells and ocean tidal

105. California (partially), Colorado, Hawaii, Maine, Minnesota, Montana (for in-state projects), New Mexico, New York (partially), Nevada, Pennsylvania, Texas (partially), and Wisconsin are examples of this. *Id.*

106. RYAN WISER & GALEN BARBOSE, RENEWABLE PORTFOLIO STANDARDS IN THE UNITED STATES: A STATUS REPORT WITH DATA THROUGH 2007, REPORT NO. LBNL 154E, at 1 (2008). In 2007, Illinois, New Hampshire, North Carolina, and Oregon established new RPS policies. *Id.* at 35 tbl.A-1.

107. *Id.* at 1.

108. *Id.*

109. *Id.* at 4 fig.2.

110. K.S. CORY & B.G. SWEZEY, NAT'L RENEWABLE ENERGY LAB., RENEWABLE PORTFOLIO STANDARDS IN THE STATES: BALANCING GOALS AND IMPLEMENTATION STRATEGIES, REPORT NO. NREL/TP-670-41409, at 1 fig.1 (2007).

111. *Id.* at 1 fig.1, fig.22.

renewable resources.¹¹² Some states count co-generation, while Pennsylvania includes coal gasification and non-renewable distributed generation.¹¹³ “Resource eligibility in state RPS programs has expanded beyond traditional renewables, with three states now allowing demand-side energy efficiency to meet at least a portion of their RPS requirement.”¹¹⁴ Some states set standards based on a percentage of installed capacity, while others set standards based on a percentage of total electricity sales.¹¹⁵ Some states allow credits to be traded, while other states do not.¹¹⁶

In about half of the RPS programs, solar energy installations are being encouraged in a variety of ways.¹¹⁷ Several states award rebates to customers who install solar systems.¹¹⁸ Solar-specific RPS designs in eleven states and Washington D.C. include solar or distributed generation set-asides for a percentage of eligible projects.¹¹⁹ These set-aside policies have already supported 102 MW of solar photovoltaics and 65 MW of solar-thermal electric capacity.¹²⁰ Roughly 6700 MW of solar capacity would be needed by 2025 to fully meet existing set-aside requirements.¹²¹

Eligible project technologies are set forth in Table 4.

State Name	Renewable Energy Trust Fund	Portfolio Standards
Arizona	X	X
California	X	
Colorado		X
Connecticut	X	X
Delaware	X	

112. *Id.* at 4 tbl.1.

113. Benjamin K. Sovacool & Christopher Cooper, *Big IS Beautiful: The Case for Federal Leadership on a National Renewable Portfolio Standard*, *ELECTRICITY J.*, May 2007, at 48, 50.

114. WISER & BARBOSE, *supra* note 106, at 11 & tbl.4.

115. Sovacool & Cooper, *supra* note 113, at 50.

116. *Id.* at 2.

117. CORY & SWEZEY, *supra* note 110, at 27 n.21.

118. *Id.* at 11–12, tbl.3.

119. WISER & BARBOSE, *supra* note 106, at 1.

120. *Id.*

121. *Id.*

122. The number of types of RPS programs evolves constantly. For a current inventory of the state of RPS programs, see Database of State Incentives for Renewables & Efficiency, Summary Maps, <http://www.dsireusa.org/summarymaps/index.cfm?ee=1&RE=1> (last visited Dec. 28, 2009).

Hawaii		X
Illinois	X	
Iowa		X
Maine		X
Maryland		X
Massachusetts	X	X
Minnesota	X	X
Montana	X	
Nevada		X
New Jersey	X	X
New Mexico		X
New York	X	
Ohio	X	
Oregon	X	
Pennsylvania	X	X
Rhode Island	X	
Texas		X
Vermont		X
Wisconsin	X	X

State	Solar	Wind	Fuel Cell	Methane/Landfill	Biomass	Trash-to-Energy
Arizona	X	X			X	
California	X	X		X	X	X
Connecticut	X	X	X	X	X	X
Iowa	X	X	X		X	
Illinois	X	X			X	X
Maine	X	X	X		X	X
Maryland	X	X	X	X	X	
Massachusetts	X	X	X	X	X	X
Minnesota		X			X	
Nevada	X	X	X			
New Jersey	X	X	X	X	X	X
New Mexico	X	X	X	X	X	X
New York	X	X				X
Oregon	X	X		X		X
Pennsylvania	X	X		X	X	X

123. *Id.*

Rhode Island	X	X		X	X	X
Texas	X	X		X	X	X
Wisconsin	X	X	X	X	X	X
Table 4: "Renewable" Resources as Defined in State Statutes (continued)						
State	Hydro	Tidal	Geothermal	Photovoltaic	Dedicated Crops	
Arizona		X		X		
California	X		X	X		
Connecticut	X			X		
Iowa				X		
Illinois	X			X	X	
Maine	X	X	X	X		
Maryland		X	X	X		
Massachusetts	X	X		X	X	
Minnesota						
Nevada			X	X		
New Jersey	X	X	X	X		
New Mexico	X	X	X	X		
New York	X	X	X	X		
Oregon	X	X	X	X	X	
Pennsylvania	X		X	X	X	
Rhode Island	X			X		
Texas	X	X	X	X		
Wisconsin	X	X	X		X	

Note: Photovoltaic is included within solar in some states; methane or trash-to-energy may be included within a broad definition of "biomass."¹²⁴

RPS programs have had an impact on the move in the United States to more deployment of renewable power projects. Over fifty percent of the non-hydro renewable capacity additions in the U.S. for the decade from 1998 through 2007 occurred in states with RPS programs. Ninety-three percent of these renewable electric generation additions in all states came from wind power, four percent from biomass, two percent from solar, and one percent from geothermal resources.¹²⁵ In those states that have RPS programs, more than ninety percent of renewable energy additions (and more than eighty percent of average capacity supplied) is from wind power, with biomass a distant second and limited geothermal resource development.¹²⁶ It is estimated that between sixty and ninety percent

124. Ferrey, *supra* note 54.

125. WISER & BARBOSE, *supra* note 106, at 1.

126. *Id.*

of RPS-driven renewable energy capacity additions going forward will be wind power projects.¹²⁷ It has also been estimated that RPSs motivated approximately forty-five percent of the 4300 MW of wind power installed in the United States between 2001 and the end of 2004.¹²⁸ An additional fifteen percent of these installations were motivated by state renewable energy trust funds and subsidies.¹²⁹

There are a variety of nuances and idiosyncrasies state-by-state. RECs for RPS compliance have different longevities and shelf lives. “The shelf life of a REC . . . can be as short as three months (in New England) to as long as four years (in Nevada and Wisconsin).”¹³⁰ Massachusetts utilizes a confined period to transfer credits from generators to retail suppliers but allows banking for two years of up to thirty percent of the annual RPS requirement; Delaware, Maryland along with the District of Columbia extend banking to a three-year period, and California allows indefinite banking which perpetually guarantees the longevity of credits once created as a function of renewable power generation.¹³¹ In some cases where RECs have shorter life spans, they can be banked from one year to the next to meet a certain percentage of the next year’s annual requirement.¹³²

States employing RPS programs treat customer-side generation differently. While Massachusetts and Rhode Island only allow these resources to earn RECs if they are located within the respective state, Connecticut allows such facilities to earn credits when situated elsewhere in the New England region.¹³³

There are several regional tracking systems in operation for renewable energy attributes:¹³⁴ the NEPOOL GIS, the PJM-EIS

127. Ryan Wiser and Mark Bolinger, *Balancing Cost and Risk: The Treatment of Renewable Energy in Western Utility Resource Plans*, *ELECTRICITY J.*, January 2006, at 48.

128. *Id.*

129. *Id.*

130. CORY & SWEZEY, *supra* note 110, at 5.

131. *Id.*

132. See ANDREW SCHWARTZ, CAL. PUB. UTILS. COMM’N, *RENEWABLE ENERGY CERTIFICATES AND THE CALIFORNIA RENEWABLES PORTFOLIO STANDARD PROGRAM 28* (2006) (discussing banking in the California RPS).

133. Application of Pratt & Whitney for Connecticut Renewable Generator Qualification – Cape Cod Community College Fuel Cell, Docket No. 04-05-13-RE01, 2005 WL 2293281 (Conn. Dep’t of Pub. Utils. July 28, 2005) (reopening docket).

134. Renewable energy attributes include RECs, and can also include any regulatory credits at the state or federal levels with regard to regulation of global warming gases and criteria pollutant emissions. These are credits created by law to represent the nature or quality of the environmental benefits associated with certain power generation technologies.

GATS, the WREGIS, and the M-RET.¹³⁵ In addition to the electronic REC tracking systems in place, Wisconsin also can electronically track RPS within each state,¹³⁶ as well as in Texas/ERCOT and New Jersey (only for solar energy).¹³⁷ Large portions of the south, outside of Texas, do not have the ability to track RECs.¹³⁸ “Because the definitions of . . . RECs created under various state programs differ, there is significant geographic limitation in cross-market REC trading and liquidity.”¹³⁹

Non-compliance penalties vary by state.¹⁴⁰ Average RPS compliance in 2006 was ninety-four.¹⁴¹ Alternative compliance payments of more than \$18 million were paid in 2006; financial penalties have been applied in two states.¹⁴² The non-compliance or alternative payment penalty ranges from around \$0.05 per kWh in California, Connecticut, Washington, Rhode Island, Maine and Massachusetts, to lower amounts in other states (although New Jersey and New Hampshire have equally high penalties for non-compliance with Class I resources).¹⁴³ In 2005, sixty-two of the Massachusetts RPS requirements were satisfied, while power sellers were required to pay state penalties of \$53.19 per MWh for the unsatisfied thirty-eight percent.¹⁴⁴

The required percentage of energy delivered from renewables ranges from 2% to 30% of annual retail sales in different state programs, but these numbers can be deceiving, depending upon whether electricity produced by preexisting renewable resources are eligible to be counted.¹⁴⁵ Maine is at the thirty percent level.¹⁴⁶ A 2007

135. EDWARD A. HOLT & RYAN H. WISER, LAWRENCE BERKELEY NAT'L LAB., THE TREATMENT OF RENEWABLE ENERGY CERTIFICATES, EMISSIONS ALLOWANCES, AND GREEN POWER PROGRAMS IN STATE RENEWABLES PORTFOLIO STANDARDS, REPORT NO. LBNL-62574, at 7 (2007).

136. Ryan Wiser et al., *The Experience with Renewable Portfolio Standards in the United States*, ELECTRICITY J., May 2007, at 8, 12.

137. HOLT & WISER, *supra* note 135, at 7.

138. *See id.* at 7 fig. 3.

139. Steven Ferrey, *When 1 + 1 No Longer Equals 2: The New Math of Legal "Additionality" Controlling World and U.S. Global Warming Regulation*, 10 MINN. J. L. SCI. & TECH. 591, 626 (2009).

140. *See* CORY & SWEZEY, *supra* note 110, at 16 tbl.5.

141. WISER & BARBOSE, *supra* note 106, at 1.

142. *Id.*

143. *See* CORY & SWEZEY, *supra* note 110, at 16 tbl.5.

144. COMMONWEALTH OF MASS. DIV. OF ENERGY RES., ANNUAL RPS COMPLIANCE REPORT FOR 2005, at 4 (2007), available at <http://www.mass.gov/Eoea/docs/doer/rps/rps-2005annual-rpt.pdf> [hereinafter MASS. 2005 RPS COMPLIANCE REPORT].

145. Ferrey, *supra* note 139, at 626.

amendment to the Maine RPS program now requires renewable power to be percent of capacity by 2017, starting at one percent in 2008 and increasing by one percent annually.¹⁴⁷ The penalty for noncompliance was set at \$57.12 per MWh in 2007, which will rise with inflation, and can be waived by the Public Utilities Commission (PUC).¹⁴⁸ Failure to comply can result in license revocation or other financial penalties.¹⁴⁹

Rhode Island requires that 3% of the electricity portfolio be renewable energy starting in 2007, rising to sixteen percent in 2020.¹⁵⁰ An alternative compliance payment of \$50 per MWh in 2003 dollars can be made in lieu of meeting the portfolio standard.¹⁵¹ Buyers also can “bank” renewable certificates for up to two years for future use.¹⁵² Connecticut will recognize RPS credits from other states in the NEPOOL system until 2010, and thereafter will additionally recognize credits from New York, Pennsylvania, New Jersey, Maryland or Delaware if it is determined at that time that their RPS program standards are similar to those of Connecticut.¹⁵³ The details of Northeast state’s RPS programs are illustrated in Table 5.

Fitch Ratings¹⁵⁴ estimated in 2006 that the initial phase of U.S. cap-and-trade CO₂ emission reductions will cost electric utilities approximately \$6.5 billion annually.¹⁵⁵ Where it is directly sourcing power, the Department of Defense must seek RECs for their military

146. *Id.* at 627 tbl.4.

147. Tom Tiernan, *EEI Says some RPS targets ‘Unachievable’ as Industry deals with Infrastructure Debate*, PLATTS ELECTRIC UTIL. WEEK, May 5 2008, at 7.

148. *Id.*

149. *Id.*

150. NAT’L RESEARCH COUNCIL, ELECTRICITY FROM RENEWABLE RESOURCES: STATUS, PROSPECTS, AND IMPEDIMENTS 247 (2009), available at http://books.nap.edu/openbook.php?record_id=12619&page=1.

151. Union of Concerned Scientists, Rhode Island Renewable Energy Standard Summary 6, at http://www.ucsusa.org/assets/documents/clean_energy/rhode-island.pdf.

152. *Id.*

153. DPUC Review of RPS Standards and Trading Programs in New York, Pennsylvania, New Jersey, Maryland and Delaware, Docket No. 04-01-13, 2005 WL 3571725 (Conn. Dep’t of Pub. Utils. Nov. 9, 2005).

154. The Fitch Group is a global rating agency that provides the world’s credit markets with credit opinions. It is a majority-owned subsidiary of Fimalac, S.A., Paris, France. For additional information, see www.fitchratings.com.

155. *Fitch Puts Utilities’ Initial CO₂ Program Cost at \$6.5 Bil; It Sees Cap-and-Trade Imminent*, PLATTS ELECTRIC UTIL. WEEK, November 13, 2006, at 10. This was modeled on a RGGI-capped model with carbon allowances trading at \$10/allowance. It also concluded that thousands of megawatts of electric generation capacity would have to be replaced with zero-emission energy sources.

bases' procurement of power in states where there are RPS requirements.¹⁵⁶ Analyses by the U.S. Energy Information Administration¹⁵⁷ and the Union of Concerned Scientists¹⁵⁸ forecast that RPS systems can depress retail power prices by reducing the demand for, and therefore the price of, fossil-fuel-fired generation resources; reduce dependence on fossil fuels; promote renewable energy development; and significantly reduce carbon dioxide emissions.

Table 5: Seven Northeast State RPS Requirements¹⁵⁹

State	Requirement	Technology Eligibility	REC Prices	Trading
Connecticut 3 Classes	Class I technologies: 1% in 2004 +0.5%/yr; to 2% by 2006 +1.5%/yr; to 5% by 2008; +1%/yr to 7% in 2010 and thereafter Class I or II technologies: 3% in 2004 and thereafter	Class I: solar, wind, landfill gas, new (post 7/1/03) run of river hydro (<= 5 MW), fuel cells, ocean thermal, wave or tidal, low-e RE conversion tech., low NOx emitting, sustainable biomass (Biomass facilities with quarterly avg. NOx emission rate <= 0.075 lbs. per MMBTU. Existing (pre 7/1/03) biomass facilities <= 500 kW are exempt from NOx emission requirement.) Class II: MSW, existing (prior to 7/1/03) run of river hydro (<= 5 MW), other biomass (facilities must have quarterly avg. NOx emission rate <= 0.2 lbs. per MMBTU)		

156. See Bill Opalka, *U.S. Military Leads Green Charge*, RENEWABLEENERGYWORLD.COM, July 29, 1009, <http://www.renewableenergyworld.com/rea/news/article/2009/07/u-s-military-leads-green-charge>.

157. ENERGY INFO. ADMIN., THE NATIONAL ENERGY MODELING SYSTEM: AN OVERVIEW, REPORT NO. DOE/EIA-0581 (2009), available at <http://www.eia.doe.gov/oiaf/aeo/overview>.

158. STEVEN L. CLEMMER, ET AL., UNION OF CONCERNED SCIENTISTS, A POWERFUL OPPORTUNITY: MAKING RENEWABLE ELECTRICITY THE STANDARD (1999).

159. Adapted from Ferrey, *supra* note 139, at 627 tbl.4.

Maine	30% of sales in 2000 (start of competition) and thereafter as a condition of licensing.	Fuel cells, tidal power, solar, wind, geothermal, hydro, biomass, and MSW (under 100 MW) High efficiency cogen. systems of unlimited size.		
Maryland	Tier 1 Renewables: 1% in 2006, increasing 1% biannually to 7% in 2018, increasing to 7.5% in 2019, and thereafter Tier 1 or 2 Renewables: 2.5% 2006-2018	Tier 1: solar, wind, biomass, landfill gas, geothermal, ocean, fuel cells (renewable sources only), and small hydro (< 30 MW) Tier 2: hydro, MSW, and incineration of poultry litter		
Massachusetts	1% of sales from new renewables by 2003 +0.5%/yr. to 4% in 2009; +1 % per year thereafter until date determined by Division of Energy Resources.	Solar, wind, ocean thermal, wave, tidal, landfill gas, and low-emission advanced biomass beginning commercial operation or representing increase in capacity at existing facility after 12/31/97. Hydro and MSW qualify as existing and are not eligible.	>\$50/mwh	W/in ISO-NE
New Jersey 3 Classes	Class I or II Technologies: 2.5% by 2004-2008. Class I technologies: 0.74% in 2004; 0.983% in 2005; 2.037% in 2006; 2.924% in 2007; and 3.84% in 2008. Solar Electric: 0.01% in 2004; 0.017% in 2005; 0.0393% in 2006; 0.0817% in 2007; and 0.16% in 2008. NJBPUs sets	Class I: solar, wind, geothermal, wave, tidal energy, landfill gas, fuel cells, sustainable biomass Class II: MSW or hydro (<30 MW) that meets high environmental standards	Class I \$750 Class II \$350 Solar: \$200	New Jersey Maryland

	<p>requirements for 2009 and after, but must be at or above 2008 levels (see comments regarding proposed RES requirements through 2020.</p>			
New York	<p>New renewable energy requirement: 0.8% in 2006, increasing ~0.8%/yr to 6.56% in 2013. Customer-sited tier is 2% of total annual RES targets. With existing baseline renewable energy, and generation expected from state purchase requirement, renewable energy increases from 19.45% in 2003 to 24% in 2013 (an additional 1% is expected to come from voluntary green pricing programs).</p>	<p>Main Tier, wind, solar, ocean, biomass, biogas, fuel cells, incremental hydro, and low-impact run-of-river hydro > 30 MW Customer Tier: solar, wind (<300kW), fuel cells, and methane digesters.</p>		
Rhode Island	<p>3% by 2007, increasing 0.5%/yr. to 4.5% in 2010, then increasing by 1 %/yr. to 8.5% in 2014, then increasing by 1.5%/yr. to 16% in 2019. Requirement remains at 16% in 2020 and thereafter unless the</p>	<p>Solar, wind, ocean, geothermal, biomass, co-firing, hydro (< 30 MW), fuel cells using renewable resources</p>		

	PUC determines it is no longer necessary.			
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C. *The Value of Renewable Energy Credits and Offsets*

The prices of traded RECs have been relatively high in three states: Massachusetts, Connecticut (for Class I RECs), and Rhode Island.¹⁶⁰ REC trading prices in other states have been significantly lower; led by New Jersey Class I RECs.¹⁶¹ In most other states, supply exceeds the demand for RECs, and the prices have trended at about ten percent of those in the three highest states.¹⁶²

The price impact of RPS-mandated renewable energy projects has been estimated to range between a 0.1% increase in retail rates (in Maine, Maryland, New Jersey and New York) and a 1.1% increase in Massachusetts.¹⁶³ In 2005, Massachusetts collected \$19.6 million in alternative compliance payments under its RPS system, and nearly \$17.8 million in 2006.¹⁶⁴ In a 2007 Massachusetts auction, RECs sold above the \$0.055 per kWh alternative compliance payment (ACP) that units must pay if they are deficient in RECs: 396 RECs from the Massachusetts Maritime Academy were sold for a price of \$0.0571 per kWh during the first quarter of 2007, by Evolutions Markets, well above the ACP.¹⁶⁵ A utility RPS charge of only \$0.001 per kWh would raise almost \$4 billion annually if imposed across all retailed power in the United States.¹⁶⁶

[There is] significant regulatory uncertainty around RPS programs. Either a regulatory change in eligible projects, or court interpretation of these programs, can cause great volatility in RECs

160. WISER & BARBOSE, *supra* note 106, at 27 fig.15.

161. *Id.*

162. *Id.* at 28.

163. Wiser et al., *supra* note 136, at 16 & fig.4 (forecasting that the cost of this implementation would be no more than one percent).

164. MASS. 2005 RPS COMPLIANCE REPORT, *supra* note 144, at 4; COMMONWEALTH OF MASS. DIV. OF ENERGY RES., ANNUAL RPS COMPLIANCE REPORT FOR 2006, at 4 (2008), available at <http://www.mass.gov/Eoeea/docs/doer/rps/rps-2006annual-rpt.pdf> [hereinafter MASS. 2006 RPS COMPLIANCE REPORT].

165. Press Release, Evolution Markets, Evolutions Markets to Host Renewable Energy Certificates Auction for the Massachusetts Maritime Academy (Apr. 17, 2008), http://new.evomarkets.com/pdf_documents/Evolution%20Hosts%20REC%20Auction%20for%20Maritime%20Academy.pdf.

166. See Energy Info. Admin., Electricity Explained, www.eia.doe.gov/basics/quickelectric.html (last visited Dec. 2, 2009). US retail electricity sales equaled 3923814000 MWh in 2007. *Id.*

pricing. For example, Connecticut Class I resources were originally defined to include wind, landfill methane, fuel cell, and solar voltaic resources, and REC prices ranged from \$35 to \$50 per REC with this definition. However, in June 2003, the [l]egislature amended the definitions to add certain biomass generation plants located in New England as Class I resources if they reduced NO_x emissions. The Connecticut Department of Public Utility Control made an advisory ruling that an existing biomass plant located in Maine “retooled” to meet a lower NO_x emission standard would qualify for Class I Connecticut RECs. The market for Class I RECs came crashing down, dropping the forward price for 2006 RECs by approximately 90%, from near \$35 per [MWh] to near \$2.50 per [MWh]. Prices later jumped back to near \$30 to \$50 per REC.¹⁶⁷

Massachusetts, in contrast, tightened the eligibility requirements for biomass facilities. The Massachusetts Department of Energy Resources replaced guidelines that allowed retrofitted biomass facilities to qualify under the RPS with a policy statement that specifically excluded such facilities from eligibility.¹⁶⁸ The new policy statement ultimately protected the Massachusetts REC price, which hovered at the level of the ACP.¹⁶⁹

One-third of sales of “green” electricity are actually the purchase of RECs, rather than the purchase by a consumer of generated renewable energy.¹⁷⁰ In other words, rather than actually purchase the energy output of a renewable generator through a bilateral contract, buyers purchase just the state-created REC, rather than the energy itself. This purchases the virtual representation of the renewable energy, if not the energy itself. Seventy-seven percent of the green power sales were sold to non-residential customers.¹⁷¹ In other words, businesses, rather than individual households, have purchased the great majority of renewable attributes of power generation. This evidences that commercial and institutional entities,

167. Ferrey, *supra* note 139, at 631–32.

168. MASS. DIV. OF ENERGY RES., GUIDELINE ON THE MA RPS ELIGIBILITY OF GENERATION UNITS THAT RE-TOOL WITH LOW EMISSION, ADVANCED BIOMASS TECHNOLOGIES (2004), available at <http://www.mass.gov/Eoeea/docs/doer/rps/g-lebio.pdf>; MASS. DIV. OF ENERGY RES., POLICY STATEMENT OF RPS ELIGIBILITY OF RETOOLED BIOMASS PLANTS (2005), available at <http://mass.gov/doer/rps/rps-pol-stat-elig-biomass.pdf>; MASS. DIV. OF ENERGY RES., NOTICE OF INQUIRY REGARDING SOME PROPOSED REVISIONS OF THE REGULATIONS PERTAINING TO THE DEFINITION OF "LOW-EMISSION, ADVANCED BIOMASS POWER CONVERSION TECHNOLOGIES" (2005), available at http://mass.gov/doer/rps/rps_notice_of_inquiry.pdf [hereinafter NOTICE OF INQUIRY].

169. NOTICE OF INQUIRY, *supra* note 168.

170. LORI BIRD ET AL., NAT'L RENEWABLE ENERGY LAB., GREEN POWER MARKETING IN THE UNITED STATES: A STATUS REPORT 4 (2008).

171. *Id.*

rather than ordinary residential consumers, are the mainstay of green electricity purchasers.

V. SHORTCOMINGS OF STATE RPS PROGRAMS

A. *Location of Renewable Resources: A Constitutional Issue*

States regard the geographic location where RECs are created differently:

- At least three states expressly require that the RECs be created by in-state power generation, and two additional states require that RECs be created either in-state or in the service territory of a state utility—this raises some dormant commerce clause issues.¹⁷²
- Some states require an in-state transmission interconnection to count an out-of-state REC.¹⁷³
- Several states require that a REC actually be associated with energy that is, or could be, by virtue of contracted transmission capability, delivered in-state.¹⁷⁴
- Some states allow a wider trading area within an Independent System Operator (ISO) or similar electric transmission system region.¹⁷⁵
- Some states encourage, but do not require, RECs to be traded in-state by attaching a multiplier value to in-state RECs.¹⁷⁶
- Distributed generation typically must be located in-state to qualify to create RECs.¹⁷⁷

Such state RPS eligibility rules regarding RECs may limit eligible projects geographically. Some states attempt to limit projects to those constructed within the state or require direct interconnection to the state or state-connected regional grid, essentially to allow the moving

172. Iowa, the XCEL requirement in Minnesota, and Hawaii are examples of this. CORY & SWEZEY, *supra* note 110, at 8.

173. Arizona and Texas are examples of this. CORY & SWEZEY, *supra* note 110, at 8 tbl.2.

174. Arizona, California, Wisconsin, Minnesota, New Mexico, and New York are examples of this. Delivery can be required on a real-time, a monthly, or a yearly basis. *Id.*

175. California, the New England states, Delaware, New Jersey, and Pennsylvania are examples of this, as are multi-jurisdictional utilities. In this case, unbundled RECs can trade apart from the actual energy trade. *Id.*

176. Colorado, Delaware, and Arizona have attached in-state multipliers to RECs created in the state. *Id.* at 12 tbl.3.

177. Requirements to create RECs in a state raise dormant commerce clause issues and multipliers can raise similar concerns. *Id.* at 9.

conductor electrons initiated outside the state to travel into the state. Colorado, Illinois, and North Carolina give preference to in-state projects.¹⁷⁸ Hawaii and Iowa require RPS generation to be in-state or from the service territory of an in-state utility.¹⁷⁹ California's amendments to its RPS law in 2006 for the first time in a decade allowed new out-of-state generation to be counted toward RPS requirements of load-serving entities in the state, removing constitutional issues.¹⁸⁰ Eight states require that the power eligible for RPS RECs must be delivered to in-state load-serving entities.¹⁸¹

Geographic program restrictions raise commerce clause concerns under the Constitution.¹⁸² A number of states prohibit REC credits for out-of-state or out-of-region generation facilities.¹⁸³ For example, New England requires that a REC producer make arrangements on an hourly basis to actually deliver the power to the New England region.¹⁸⁴ New York has a similar system.¹⁸⁵ Rhode Island has approved RPS credits for a project located in New York State,¹⁸⁶ as have other states.

The NEPOOL GIS tracking system will only track those resources for RPS credit where out-of-region projects have obtained "firm transmission" into the region of power equal to or exceeding the generation from an eligible RPS renewable facility.¹⁸⁷ The NEPOOL system is dispatched on an hourly-forward basis.¹⁸⁸ This does not mean that the exact electrons moved by renewable energy must enter the NEPOOL system. However, enough transmission capacity must be under contract to carry the output of those renewable resources into the NEPOOL region in order to create credits in a New England state with an RPS program.¹⁸⁹

178. WISER & BARBOSE, *supra* note 106, at 10.

179. *Id.*

180. See S.B. 107, 2006 Leg., Reg. Sess. (Cal. 2006), available at http://www.energy.ca.gov/portfolio/documents/sb_107_bill_20060926_chaptered.pdf.

181. WISER & BARBOSE, *supra* note 106, at 10.

182. FERREY, ENVIRONMENTAL LAW: EXAMPLES AND EXPLANATIONS (4th ed. 2007).

183. WISER & BARBOSE, *supra* note 106, at 9 tbl.2.

184. CORY & SWEZEY, *supra* note 110, at 8.

185. WISER & BARBOSE, *supra* note 106, at 10 tbl.3.

186. STATE OF R.I. PUB. UTILS. COMM'N, RHODE ISLAND RENEWABLE ENERGY RESOURCES ELIGIBILITY APPLICATIONS (2008), [http://www.ripuc.org/utilityinfo/RES-Applications-Status\(6-21-08\).pdf](http://www.ripuc.org/utilityinfo/RES-Applications-Status(6-21-08).pdf).

187. CORY & SWEZEY, *supra* note 110, at 8.

188. *Id.*

189. Re Retail Renewable Portfolio Standard – Delivery Requirements for Imports, 250 Pub. Util. Rep. 4th (PUR) 80 (N.Y. Pub. Servs. Comm'n June 28, 2006).

Other systems, such as the PJM GATS system, provide a more flexible REC accounting scheme. For the PJM region, this system only requires monthly matching of power from eligible renewable sources out of state to transmission capacity into the region in order to qualify for a REC.¹⁹⁰ This longer averaging period is much more accommodating than an hourly matching period of out-of-state RECs in the PJM region, which may or may not be physically moved into the state (but for accounting purposes can show that it could have been moved into the state) over committed transmission capacity.

The PJM interconnect now controls thirteen Mid-Atlantic states and the District of Columbia's transmission decisions.¹⁹¹ One can only trade RPS credits inside the PJM member states if one is physically located within the PJM geographic boundary. Certain member states—such as Delaware, Maryland and the District of Columbia—propose additional requirements of actual transmission into the system for eligibility.¹⁹² Generators in the New York ISO can trade RECs into Massachusetts, but generators in the PJM control area cannot trade credits into New York.¹⁹³

Yet power does move across state borders, and as only “paper” creations, RECs move to be registered in the state where they can be traded for the highest value for the generator/trader. Certain high-value REC states have experienced a proliferation of participating RECs-creating facilities registering and trading RECs from outside the state. Massachusetts has traded its general RECs at the highest value. A 2008 report by the Massachusetts Department of Energy Resources calculated that the number of plants providing RECs to Massachusetts in 2004 was only nineteen; by 2007 this number had risen to fifty-three plants.¹⁹⁴ The largest supply of Massachusetts RECs, about thirty-nine percent, came from predominantly biomass facilities in Maine, with other New England states providing

190. Re Retail Renewable Portfolio Standard: Order Authorizing Additional Main Tier Solicitations and Directing Program Modifications, Case No. 0e-E-0188, 2006 WL 191959 (N.Y. Pub. Servs. Comm'n Jan. 26, 2006).

191. See PJM Interconnection, PJM Territory Served, <http://www.pjm.com/about-pjm/how-we-operate/territory-served.aspx> (last visited Oct. 31, 2009); see also PJM Interconnection, Re:new: PJM 2008 Annual Report 31 (2008), available at <http://www.pjm.com/about-pjm/who-we-are/~media/about-pjm/newsroom/2008-annual-report.ashx>.

192. Sovacool & Cooper, *supra* note 113, at 51.

193. *Id.* at 52; see also Christopher B. Berendt, *A State-Based Approach to Building a Liquid National Market for Renewable Energy Certificates: The REC-EX Model*, ELECTRICITY J., June 2006, at 54.

194. Lisa Wood, *Massachusetts' REC Supply Now Equals Demand, A Sharp Reversal from Recent Years*, ELECTRIC UTILITY WEEK, Feb. 25, 2008, at 10.

seventeen percent of RECs and New York and Quebec accounting for twenty percent. This left only about one-quarter of Massachusetts RECs originating in Massachusetts.¹⁹⁵

In 2007, the Massachusetts penalty rate for not having sufficient RECs was \$57.12 per REC.¹⁹⁶ Massachusetts had a seventy percent RPS compliance rate in 2006, sixty-two percent in 2005, and fifty-nine percent in 2004.¹⁹⁷ In 2006, retailers paid \$17.8 million in compliance penalties to the state because they did not have sufficient RECs.¹⁹⁸

B. Legal Ownership of Traditional RECs

The FERC rule on ownership of RECs has sown much confusion. Essentially, it leaves to states the determination of who owns newly created, and in some cases previous QF-vintage, RECs. Where ownership of RECs is allocated by contract, the contract controls. However, most older QF power sale contracts were silent on this issue.¹⁹⁹

FERC held that “contracts for the sale of QF capacity and energy entered into pursuant to PURPA do not convey RECs to the purchasing utility (absent express provision in a contract to the contrary) [A] state may decide that a sale of power at wholesale automatically transfers ownership of the state-created RECs.”²⁰⁰ An April 2004 order denying rehearing restated the position taken in the original order.²⁰¹

195. *Id.*

196. COMMONWEALTH OF MASS. DIV. OF ENERGY RES., ANNUAL RPS COMPLIANCE REPORT FOR 2007, at 6 (2008), *available at* <http://www.mass.gov/Eoeea/docs/doer/rps/rps-2007annual-rpt.pdf> [hereinafter MASS. 2007 RPS COMPLIANCE REPORT].

197. MASS. 2006 RPS COMPLIANCE REPORT, *supra* note 164, at 14.

198. *Id.* at 4.

199. An exception was early contracts negotiated for QF power purchase by certain of the New England utilities, which assigned all future credits related to air emissions to the utility purchase. At the time, no such credits may have existed. See, e.g., Qualifying Facility contracts executed by subsidiaries of the New England Electric System and its operating subsidiaries. These contracts were assigned to the buyers of the generation assets of this electric system.

200. *Wheelabrator Lisbon, Inc. v. Conn. Dep't of Pub. Util. Control*, 531 F.3d 183 (2nd Cir. 2008) (*quoting* *Am. Ref-Fuel Co.*, 105 F.E.R.C. ¶ 61,004 (2003)).

201. *Am. Ref-Fuel Co.*, 107 F.E.R.C. ¶ 61,016 (2004) (Thirteen other QFs, industry associations, municipalities and others intervened in support of the petition. The Maine PUC, and a group of eighteen other state utility commissions and utility purchasers of renewable QF energy under PURPA contracts, intervened in opposition to the QFs' petition. Another sixteen parties intervened either with no position or in an untimely manner. While distribution utilities that purchased QF power later claimed that they also implicitly owned future-created RECs, they are arguing that impliedly they bought all later-created and non-negotiated attributes of power generation. However, utilities have not claimed any ownership or responsibility for other

FERC has delegated authority to states to determine ownership of traditional RECs. The state rulings are split. Some states have granted the RECs to utilities in transactions that do not specifically address ownership of the RECs.

Sixteen states have adopted some legal position, the majority of which have assigned vintage RECs under silent QF contracts to utility purchasers of power.²⁰² Two of the states have determined that QFs must be compensated financially for relinquishing title to these vintage RECs.²⁰³ Almost half of the states with new contracts have allowed RECs to be retained by the QF where the contract is silent. As a generalization, vintage QF RECs, where the contract is silent, are vested with the utility purchaser of power, while new contracts, where silent, retain the RECs with the power generator and seller.²⁰⁴ In the great majority of states that require utilities to net meter power to on-site generators, where REC ownership is not explicitly addressed, RECs are allowed to be retained by the net-meter generator.²⁰⁵

Most states that provide additional cash or other subsidies to renewable generators typically do not address whether any transfer of RECs occurs in return for the funding.²⁰⁶ However, two states require that, in return for funding, any RECs created are conveyed to the entity supplying the funding.²⁰⁷ There does not appear to be a convincing legal rationale as to why exported net metered power generation is treated in one manner regarding RECs and stand-alone QF or otherwise eligible power generation is treated differently.

attributes of power generation such as emission of criteria or toxic pollutants from non-utility generators with whom they contract for power. They have not claimed any responsibility for purchasing offsets for NO_x or SO₂, not have they claimed ownership of environmental residues such as bottom ash, fly ash, or other chemicals that are attributes of the generation of electricity.).

202. ED HOLT ET AL., WHO OWNS RENEWABLE ENERGY CERTIFICATES? AN EXPLORATION OF POLICY OPTIONS AND PRACTICE, REPORT NO. LBNL-59965, at xiv tbl.ES-2 (2006), available at <http://eetd.lbl.gov/ea/emp/reports/59965.pdf>.

203. *Id.* at 43.

204. *See id.* at xiii.

205. *Id.* at xiv. Of the first 12 states to address the issue in the context of net metering, six states allowed the generator to retain all RECs, three states allowed the RECS from on-site use of power to be retained by the generator and the RECs associated with exported excess net power to be vested with the utility (although two of these three required compensation to the customer for that title transfer), while one state divided the RECs between the two parties. *Id.* at xv tbl.ES-3.

206. *Id.* at xv.

207. *Id.* at xvi tbl.ES-4.

The Maine PUC concluded that RECs were “a fundamental part” of legacy PURPA contracts and that the transactions thereunder “were, in effect, a bundled sale of energy and attributes that at the time represented a single product.”²⁰⁸ On February 14, 2003, the Maine PUC created an explicit exception that “allow[s] purchasers of the QF entitlements, who do not receive associated GIS certificates, to use the entitlements.”²⁰⁹ This decision created the possibility of double counting, which the Maine PUC acknowledged.²¹⁰

Pennsylvania’s Board of Public Utilities determined that the ownership of RECs belongs to the purchaser.²¹¹ In two separate rulings, *Minnesota Methane* (involving landfill gas (LFG) produced at the Harford Landfill),²¹² and *Wheelabrator* (regarding a resource recovery project),²¹³ the Connecticut Department of Public Utility Control (DPUC) vested ownership of RECs in the utility, citing the FERC *American Ref-Fuel* decision.²¹⁴

The Connecticut Supreme Court upheld the decisions of the Connecticut DPUC regarding ownership of RECs associated with pre-existing QFs entitled to sell power to utilities under PURPA.²¹⁵ In two cases decided on the same day, the Court held that long-term QF PURPA power sale contracts, executed prior to the existence of the Connecticut REC program, did not entitle the QF to retain the RECs.²¹⁶ Since, had the QFs not utilized renewable resources, the

208. Investigation of GIS Certificates Associated with Qualifying Facility Agreements, Docket No. 2002-506, 2002 Me. PUC LEXIS 331 at *8 (Me. Pub. Utils. Comm’n Sept. 6, 2002).

209. Amendments to Information Disclosure Rule, Docket No. 2002-580, 2003 Me. PUC LEXIS 75 at *9 (Me. Pub. Utils. Comm’n Feb. 14, 2003).

210. *Id.* at *32.

211. Petition for a Declaratory Order Regarding the Ownership of Alternative Energy Credits and any Environmental Attributes Associated with Non-Utility Generation Facilities under Contract to Pennsylvania Electric Company and Metropolitan Edison Company, Docket No. P-00052149, 35 Pa. Bull. 2041, 2044–45 (Pa. Pub. Util. Comm’n Apr. 2, 2005).

212. Application of Minnesota Methane, LLC Regarding the Sale of Electricity Generated at the Hartford Landfill to the Connecticut Light and Power Company, Docket No. 96-07-21RE01, 2004 Conn. PUC LEXIS 39 (Conn. Dep’t of Pub. Util. Control Mar. 19, 2004).

213. Petition of the Riley Energy Corporation for Contract Approval and Declaratory Rulings Regarding the Lisbon Resources Recovery Project – Generation Information System Certificates, Docket No. 91-01-12RE01, 2004 Conn. PUC LEXIS 148 (Conn. Dep’t of Pub. Util. Control Dec. 6, 2004).

214. *Wheelabrator Lisbon, Inc. v. Conn. Dep’t of Pub. Util. Control*, 531 F.3d 183, 184 (2nd Cir. 2008).

215. *Wheelabrator Lisbon, Inc. v. Dep’t of Pub. Util. Control*, 931 A.2d 159 (Conn. 2007); *Minnesota Methane, L.L.C. v. Dep’t of Pub. Util. Control*, 931 A.2d 177 (Conn. 2007).

216. *Wheelabrator Lisbon*, 531 F.3d at 184.

utility would have sidestepped paying the full avoided power purchase price, the utility was entitled to the RECs, because to do otherwise, the Court reasoned, would provide a windfall to the power generators at the expense of utility ratepayers.²¹⁷

Other states have taken a pro-generator position. California acted by legislation. In 2006, California Senate Bill 107 provided that any sale of renewable power prior to 2005 included no RECs unless the buyer of power explicitly purchased those RECs by contract.²¹⁸ Therefore, the legislature deemed that parties purchasing most vintage renewable power sale and QF contracts in California would not benefit from future state-created RECs, even though the contracting parties would have entered the contract on similar terms notwithstanding this fact. Indeed, under PURPA, the utility purchaser of power would have been required to enter this contract on these terms.²¹⁹

In an unusual path to a decision, the Idaho PUC declined to rule in two matters,²²⁰ thereby avoiding leaving RECs with the project owners, concluding that Idaho had no “state-created RECs” as described in FERC’s *American-Ref* decision.²²¹ The staff of the Idaho PUC stated that if it did have the authority to rule, it would leave ownership of the RECs with QF power generators.²²²

C. Forecast of RPS Capabilities

As noted earlier, it is estimated that forty-five percent of the 4300 MW of wind power installed in the United States between 2001 and 2004 was motivated by state renewable portfolio standards, while an additional fifteen percent of these installations were motivated by state renewable energy trust funds and subsidies.²²³ Some analysts have concluded that the portfolio standard will be more influential in

217. *Id.* at 185.

218. S.B. 107, 2006 Leg., Reg. Sess. (Cal. 2006), available at http://www.energy.ca.gov/portfolio/documents/sb_107_bill_20060926_chaptered.pdf.

219. 16 U.S.C. § 824a (2006).

220. In the Matter of the Application of Idaho Power Company for Approval of an Agreement for Sale and Purchase of Electric Energy Between Idaho Power Company and the J.R. Simplot Company, Case No. IPC-E-04-16, Order No. 29577, 2004 Ida. PUC LEXIS 167 (Idaho Pub. Utils. Comm’n Sept. 3, 2004); In the Matter of a Petition Filed by Idaho Power Company for an Order Determining Ownership of the Environmental Attributes Associated with a Qualifying Facility Upon Purchase by a Utility of the Energy Produced by a Qualifying Facility, Case No. IPC-E-04-2, Order No. 29480, 2004 Ida. PUC LEXIS 76 (Idaho Pub. Utils. Comm’n Apr. 27, 2004).

221. *Am. Ref-Fuel Co.*, 107 F.E.R.C. ¶ 61,016 (2003).

222. *Id.*

223. *Wiser & Bolinger*, *supra* note 127, at 48.

promoting renewable power development than the system benefit charge or trust fund.²²⁴

It is estimated that roughly half of new renewable energy power capacity in the United States over the last decade has [occurred] in states with RPS programs in place [which constitute about 40% of the states]. Over 90% of these capacity additions have come from wind power, with biomass and geothermal resources in second and third position The National Renewable Energy Laboratory has estimated that RPS programs may result in only 8 to 12 GW of new wind capacity (about 1% of U.S. installed total capacity) relative to a base case where no RPS programs existed. Therefore, the total contribution of RPS programs appears modest in terms of total U.S. power resources.²²⁵

This may be because portfolio standards allow market forces to work; developers will develop the most cost-effective and reliable renewable technologies eligible under a state program. SBCs, on the other hand, may be directed at experimental, politically favored or less cost-effective projects. The total expected renewable capacity added by RPSs and SBCs in those states that have adopted them will be dwarfed, making up less than ten percent of the total expected increases in U.S. electric system non-renewable capacity during the first decade of the new century, and will be less than 1% of total United States electric capacity.²²⁶

Nonetheless, in a number of states, including Massachusetts, Nevada, Arizona, New York and California, new renewable energy project developments are not currently on track to meet mandatory RPS targets for renewable generation as a percentage of total retail load.²²⁷ In some states, there are extensive exemptions from the RPS purchase mandate or excuses for retailers not to obtain otherwise required RECs along the lines of force majeure have been developed.²²⁸ In several states regulatory commissions retain broad discretion to

224. Ryan Wiser et al., *Emerging Markets for Renewable Energy: The Role of State Policies During Restructuring*, *ELECTRICITY J.*, Jan./Feb. 2000, at 13, 19 (concluding that renewable portfolio standards in eight states will be more influential than system benefit charges/trust funds in 12 states in driving the overall renewable energy market between 2000 and 2010). Texas is predicted to provide the most substantial domestic market for new renewable generation, at 2,000 MW. California, Massachusetts, Connecticut and New Jersey are projected to add 400 to 600 MW each, while the remaining states are expected to add less. These authors expect the total from renewable portfolio standards and system benefit charges/trust funds to exceed that driven by green power marketing efforts, alone. *Id.* at 20.

225. Ferrey, *supra* note 139, at 623.

226. *Id.* at 20.

227. Ryan Wiser et al., *supra* note 136, at 13.

228. *Id.* at 12.

grant waivers to regulated entities that do not comply with state RPS requirements.²²⁹ Very open-ended waiver or excuse provisions exist in the RPS programs in Arizona,²³⁰ Hawaii,²³¹ Minnesota,²³² and Pennsylvania.²³³

In some states, such as Massachusetts, where RECs have traded in excess of \$50 per MWh, RECs have been sold for as much as the value of the power generated.²³⁴ In such situations, the forward-monetized value of RECs is a critical component of renewable energy financing.²³⁵ However, unless there is the ability to monetize these credits through long-term contracts or some variety of credit support mechanisms, the forward value of this revenue stream may not be translatable into project financing. REC prices under long-term contracts are significantly lower (closer to the \$25 range) than the short-term spot market prices, which hover around the ACP rate.²³⁶

Ambiguity in definitions allowed the Connecticut DPUC to exempt two of the state's largest utilities from state RPS obligations.²³⁷ Other states, such as Massachusetts, require regulated utilities to sign long-term power purchase contracts with renewable energy projects that qualify to produce RECs.²³⁸ Nevada has established a fund to guarantee utility power purchase contracts that would cover RECs

229. *Id.*

230. In the Matter of the Proposed Rulemaking for the Renewable Energy Standard and Tariff Rules, Docket No. RE-00C-05-0030, Decision No. 68566 (Ariz. Corp. Comm'n March 14, 2006), available at <http://www.cc.state.az.us/divisions/utilities/electric/RES-03-14-06.pdf>.

231. H.B. 173 CD1, 21st Leg., Reg. Sess. (Haw. 2001).

232. S.F. 0004, 85th Leg., Reg. Sess. (Minn. 2007).

233. S.B. 1030, 2004 Leg., Reg. Sess. (Pa. 2004).

234. Some RECs in Massachusetts have sold for above \$50/Mwh, which is close to the ACP which has increased with cost of living from \$50/Mwh. See MASS. 2007 RPS COMPLIANCE REPORT, *supra* note 196. In 2007, RECs in Massachusetts sold for approximately \$50/Mwh. See Housley Carr, *Florida PSC to Weigh Delaying Rate Cases Until New Members are Seated*, ELECTRIC UTILITY WEEK, Oct. 26, 2009, at 32. The wholesale trading price of power in the ISO-NE market during 2009 has been approximately \$40/Mwh. See ISO New England, www.ISO-NE.com (last visited Dec. 26, 2009).

235. Where the value of the REC is approximately equal to the value of power sold, this doubles the revenue stream earned by the generator of this power. This is significant in project development. LORI BIRD ET AL., NAT'L RENEWABLE ENERGY LAB., GREEN POWER MARKETING IN THE UNITED STATES: A STATUS REPORT (2009).

236. The recently offered NSTAR (NSTAR is the Investor Owned Utility which serves the greater Boston area) Green REC program resells RECs from the Maple Ridge Wind Farm in Upstate New York for ~1.4 cents per kWh. See NSTAR.com, NSTAR Green Customer Information, http://www.nstar.com/residential/customer_information/nstar_green/nstar_green.asp (last visited Dec. 26, 2009).

237. Sovacool & Cooper, *supra* note 113, at 51.

238. 220 Mass. Code Regs. 17.00 (2009).

purchases.²³⁹ Massachusetts utilizes its renewable trust fund to offer various types of credit support for future RECs of eligible projects at the development stage.²⁴⁰

All of these incentives, particularly [s]tate RPS standards have failed to substantially increase the deployment of renewable energy technologies on a national scale. Non-hydroelectric renewable energy resources continue to hover around 2% of the U.S. electricity supply. Therefore, while various renewable technologies are projected to double or triple their gross amount of power contribution, this is not projected to have a significant impact for two reasons. First, these renewable technologies are starting from a very small base, so that even a large percentage increase translates to a relatively small absolute increase. Second, electricity demand in the United States is increasing, so the contribution of any given project is a progressively smaller percentage of the increasing generation base.²⁴¹

Even if states effectively implemented all of their existing RPS mandates, emissions would be reduced by between 1% and 1.5% from business-as-usual scenarios by 2015 to 2020.²⁴²

Non-hydroelectric renewable energy deployment is expected to rise from about 2% to [only 3% by 2015 and] 4% by 2030. Fossil-fired energy resources are projected to maintain a roughly 70% share of total electric generation in the United States and an 86% share of total U.S. primary energy supply (including the transportation sector) in 2030. Therefore, a radical departure is not projected by the U.S. government between [2005] and 2030 in fossil fuel use.²⁴³

Many of the REC obligations are short-term, and therefore are not supporting long-term financing of eligible renewable resources that would satisfy the RECs mandate. So, the forecast is that the RPS

239. CORY & SWEZEY, *supra* note 110, at 21.

240. The Massachusetts Technology Collaborative (MTC) initiated two rounds of financing called the Green Power Partnership (MGPP). The program is currently closed. The MGPP aimed to address the lack of REC cash-flow certainty by providing long term REC contracts to developers. Under the program MTC would assume some of the risk associated with government mandated demand and the volatility of voluntary markets for RECs by signing REC purchase agreement contracts with developers. MTC then sells the RECs on the open market. The MTC places funds from REC sales into an escrow account providing to the developer the creditworthiness required by equity and debt investors. Three types of REC contracts were offered: Purchase Agreements, Put-Options, and Price-Collars. Funded projects included wind, hydro, landfill gas, solar pv, and biomass. Mass. Tech. Collaborative Renewable Energy Trust, Massachusetts Green Power Partnership, <http://www.masstech.org/renewableenergy/mgpp.htm> (last visited Dec. 26, 2009).

241. Ferrey, *supra* note 139, at 632–33.

242. Kirsten Engel, *State and Local Climate Change Initiatives: What is Motivating State and Local Governments to Address a Global Problem and What Does this Say About Federalism and Environmental Law*, 38 URB. LAW. 1015, 1026 (2006).

243. Ferrey, *supra* note 139, at 633.

system is not meeting its targets in several states, and is not expected, alone, to meet the renewable power goals that it embodies.

There is an obvious connection between RPS renewable power programs and goals for carbon reduction strategies. “That RPS mandates are primarily carbon reduction mandates seems relatively clear [T]his seems to be their primary perceived benefit.”²⁴⁴ However, a criticism of an RPS system is that much more cost-effective carbon reductions would be achieved by a carbon cap-and-trade system, resulting in greater reductions at one-third the cost per ton of carbon saved.²⁴⁵ In other words, renewable power generation may not be the low-hanging fruit, as is energy conservation, for the least expensive carbon reduction.²⁴⁶

RPS renewable power requirements also are not necessarily seen as additional carbon reductions, as they are assumed to become a component of the overall carbon cap achievement.²⁴⁷ A cap-and-trade carbon reduction program does not guarantee that any renewables will be constructed. However, long-term, electric power is the essential sector for carbon reduction and investments in power generation are long-term infrastructure realities.²⁴⁸ As opposed to an RPS system, some countries in Europe and elsewhere instead promote renewable generation with feed-in tariffs outside of the carbon reduction or cap programs.

Assuming that full compliance is achieved, current mandatory state RPS policies, in just those states that have them, will require the addition of roughly 60 GW of new renewable energy capacity by 2025,²⁴⁹ an amount equivalent to 4.7% of projected 2025 electricity generation in the United States and fifteen percent of projected electricity demand growth.²⁵⁰ It is not thought to be practically achievable to have the various RPS projects around the country install the required additional 60 GW of new generation.²⁵¹ The congested and limited state of transmission infrastructure to move renewable power from generation site to market causes some to state

244. Neal J. Cabral, *The Role of Renewable Portfolio Standards in the Context of a National Carbon Cap-and-Trade Program*, 8 SUSTAINABLE DEV. L. & POL'Y 13, 13 (2007-08).

245. *Id.* at 14 (quoting conclusions of Australian government study).

246. *Id.* at 15.

247. *Id.*

248. Quin Shea, *Let's Keep Timetables Realistic in Moving Toward a Low-Carbon Electricity Future*, ELECTRICITY J., April 2008, at 80.

249. Wisner & Barbose, *supra* note 106, at 1.

250. *Id.*

251. Tiernan, *supra* note 147, at 7.

that these requirements cannot be achieved within specified time frames.²⁵²

Therefore, with the underachievement of tax incentives, state subsidy programs, and state RPS requirements, thought has recently turned to a third alternative, feed-in tariffs for renewable power development. Feed-in tariffs have been used by various foreign countries and are being considered by several U.S. states. As additional states experiment with European-type feed-in tariffs, discussed below, it becomes crucially important to understand the legal implications and legality of a feed-in tariff model implemented in the United States at the state level.

However, this option may not be legal under U.S. constitutional law.

VI. FEED-IN TARIFFS AS THE ALTERNATIVE RENEWABLE POWER MECHANISM

A. *Feed-in Tariffs Internationally*

Feed-in tariffs are the most widely employed renewable energy policy in Europe and, increasingly, the rest of the world.²⁵³ As of 2006, seventeen European Union countries, as well as Brazil, Indonesia, Israel, South Korea, Nicaragua, Norway, Sri Lanka, Switzerland and Turkey all used feed-in tariffs to promote and support renewable energy.²⁵⁴ In March of 2008, the Kenyan Ministry of Energy proposed the adoption of feed-in tariffs for wind, biomass and small-hydro resources.²⁵⁵

A feed-in tariff establishes a secure contract for wholesale electricity at a set price that results in a rate of return attractive to investors and developers.²⁵⁶ Feed-in tariff structures are typically either fixed payments based on an electricity generator's cost to produce electricity, or as a fixed premium paid above the spot market

252. *Id.*

253. WILSON RICKERSON & ROBERT C. GRACE, THE HEINRICH BOLL FOUND., THE DEBATE OVER FIXED PRICE INCENTIVES FOR RENEWABLE ELECTRICITY IN EUROPE AND THE UNITED STATES: FALLOUT AND FUTURE DIRECTIONS 1 (2007).

254. *Id.*

255. See KENYAN MINISTRY OF ENERGY, FEED-IN-TARIFFS POLICY FOR WIND, BIOMASS AND SMALL HYDRO RESOURCE GENERATED ELECTRICITY (2008), available at http://www.investmentkenya.com/index.php?option=com_docman&Itemid=&task=doc_download&gid=20.

256. See Wilson H. Rickerson et al., *If the Shoe FITs: Using Feed-in Tariffs to Meet U.S. Renewable Electricity Targets*, ELECTRICITY J., May 2007, at 73–74.

or wholesale market price of electricity.²⁵⁷ These fixed payments are long-term contracts for anywhere from five to thirty years in duration.²⁵⁸

Feed-in tariffs increase the price of certain renewable technologies to an amount that is deemed administratively and politically necessary to encourage their development. Feed-in tariffs typically may exceed utility-avoided costs, and therefore are justified only by their objectives and results, and not typically by accepted ratemaking methodology, which aims to minimize prudent generating costs.²⁵⁹ Often fixed-payment feed-in rates and terms are differentiated by technology and are based on the cost of deploying a given renewable energy technology.²⁶⁰ Feed-in tariffs for sale of renewable power typically decline over time as the high front-end capital costs of renewable energy are amortized and as the number of installed systems increases.²⁶¹ Feed-in tariff laws usually also guarantee interconnection for distributed generation and utility scale projects.²⁶² Feed-in tariffs have been successful in encouraging significant renewable energy development in nearly all of the countries in which they have been deployed.²⁶³

The high initial capital costs of permitting and construction can hinder the development of renewable technologies, while feed-in tariff price premiums can help to offset the risk associated with those high capital costs.²⁶⁴ Feed-in tariffs offer a fixed price long term contract for payment from utility or electricity suppliers to the wholesale renewable energy generator.²⁶⁵ The structure of a feed-in

257. *Id.* at 73.

258. ANNE HELD ET AL, FEED-IN SYSTEMS IN GERMANY, SPAIN AND SLOVENIA: A COMPARISON (2007), available at http://www.feed-in-cooperation.org/wDefault_7/wDefault_7/download-files/research/ific_comparison_of_fit-systems_de_es_sl.pdf?WSESSIONID=a8b71b3dc0aded1b2333c8fd143f5a36.

259. FERREY, *supra* note 17, § 5:9.

260. JANET L. SAWIN, NATIONAL POLICY INSTRUMENTS: POLICY LESSONS FOR THE ADVANCEMENT & DIFFUSION OF RENEWABLE ENERGY TECHNOLOGIES AROUND THE WORLD 5 (2004), available at http://www.worldfuturecouncil.org/fileadmin/user_upload/Miguel/Sawin_2004_National_policy_instruments.pdf.

261. *See id.*

262. John Farrell, Feed in Tariffs in America: Driving the Economy with Renewable Energy Policy That Works 6 (2009), available at http://www.boell.de/downloads/ecology/FIT_in_America_web.pdf (noting that under European feed-in tariffs, governments “further require utilities to interconnect renewable energy projects on demand”).

263. HELD ET AL., *supra* note 258, at 4.

264. Jonathan A. Lesser & Xuejuan Su, *Design of an Economically Efficient Feed-in Tariff Structure for Renewable Energy Development*, 36 ENERGY POL’Y 981(2008).

265. *See* Sawin, *supra* note 260, at 4.

tariff can be either a long term payment based on the cost of generation—including profit—or a premium added on to the wholesale or spot-market price of electricity. So long as a generator feeds power onto the grid, it is guaranteed a long-term contract at the government mandated feed-in price for the renewable energy commodity. A feed-in tariff also can be structured to reflect the benefits that renewable energy sources provide that are not reflected in traditional fossil fuel resource-based pricing structures, including pollution costs, climate change costs, security costs, and future fossil fuel cost-uncertainty.²⁶⁶

Costs of a feed-in tariff are passed on to consumers by purchasing energy suppliers and reflect a public policy decision to increase the percentage of renewable electricity sources in use. There are myriad reasons to increase the percentage of renewable energy in a supply portfolio, including diversified domestic energy security, greater energy independence from imported supplies, local job and technology growth, reduction in pollution, and reduction of environmental damage from fossil fuel-generated electricity.²⁶⁷ The European experience justifies feed-in tariffs as a cost-effective technique, which promotes innovation and a healthy investment environment for renewable energy technologies.²⁶⁸

Germany, Denmark, and Spain, while only a small fraction of the size of the United States in square miles, were responsible for fifty-three percent of total installed global wind power capacity between 1990 and 2005.²⁶⁹ Denmark receives nearly 20% of its energy from wind power; Germany receives 5% of its energy from wind power and will meet its goal of 12.5% renewable electricity by 2009, a year earlier than expected.²⁷⁰ Germany's feed-in tariff program has created one of the world's largest solar energy markets, and Spain is close behind.²⁷¹ The policy experience in Europe has also found feed-in tariffs to be less risky, less costly, and more efficient than other types of renewable incentives, such as RPSs or other minimum percentage requirements.²⁷² These benefits have in turn led to increases in

266. See RICKERSON & GRACE, *supra* note 253.

267. ALAN NOGEE ET AL., POWERFUL SOLUTIONS: 7 WAYS TO SWITCH AMERICA TO RENEWABLE ELECTRICITY 4–12 (1999).

268. See *id.*; see also Pablo del Rio & Miguel Gual, *An Integrated Assessment of the Feed-in Tariff System in Spain*, 35 ENERGY POL'Y 994 (2007).

269. RICKERSON & GRACE, *supra* note 253, at 9.

270. *Id.*

271. *Id.* at 10.

272. *Id.* at 11; see also Lesser & Su, *supra* note 264.

domestic production and manufacturing of renewable technologies and the creation of jobs in the renewable energy sector. For example, Germany created 235,600 jobs in the renewable energy sector in 2006, a fifty percent increase from 2004.²⁷³ The solar energy market in Germany has increased rapidly.²⁷⁴

The European debate on renewable energy incentives has considered both feed-in tariff policies and RPSs. According to Rickerson and Grace, Italy, Sweden, and the United Kingdom initially favored RPSs, while Germany, Spain, and other countries favored feed-in tariffs.²⁷⁵ Consequently, Germany has 200 times the installed solar capacity and ten times the number of renewable energy jobs created as the U.K.²⁷⁶ In Germany, the current debate is whether the expense of feed-in tariffs is too high compared to what the public is willing to support.²⁷⁷ The average German electric bill has increased by roughly \$3 per month (1.45/month)²⁷⁸ over the period of feed-in tariff implementation.²⁷⁹ The German public has generally supported the increase, especially since many individuals have taken advantage of the incentives to install their own renewable energy generation systems.²⁸⁰ Overall, renewable energy installations saved 114 million tons of CO₂ in Germany in 2007.²⁸¹

For the renewable energy developer, the feed-in tariff decreases investment risk by guaranteeing an investor or developer a long-term contract at a secured price with a return on investment of eight to nine percent.²⁸² By contrast, RPS policies require developers and

273. Bundesministerium für Umwelt, Naturschutz und Raktorsicherheit, Renewable Energies Already Providing 236,000 Jobs in Germany in 2006 (Sept. 2007), http://www.bmu.de/english/renewable_energy/downloads/doc/40338.php.

274. Mark Landler, *Germany Debates Subsidies for Solar Industries*, N.Y. TIMES, May 16, 2008, at C1.

275. See RICKERSON & GRACE, *supra* note 253, at 5, 8.

276. Ashley Seager, *Green Power: Germany Sets Shining Example in Providing a Harvest for the World: Thanks to Tariff Guarantees, Germany Has 200 Times as Much Solar Energy as Britain*, THE GUARDIAN, July 23, 2007, at 27.

277. See Landler, *supra* note 274.

278. BUNDESMINISTERIUM FÜR UMWELT, NATURSCHUTZ UND RAKTORSICHERHEIT, DEVELOPMENT OF RENEWABLE ENERGIES IN GERMANY IN 2007 at 7 (2008), available at http://download.inogate.org/Seminar%201516%20April%202008%20%93EE,%20DSM%20&%20RES%94/DENA%20Documentation/background_paper_renewables_Germany_2007_en.pdf.

279. Seager, *supra* note 276, at 27.

280. See Landler, *supra* note 277.

281. BUNDESMINISTERIUM FÜR UMWELT, NATURSCHUTZ UND RAKTORSICHERHEIT, *supra* note 278, at 3.

282. Seager, *supra* note 276, at 27.

investors to secure contracts, which may not be long-term, for energy and for RECs. Finding long-term contracts for two commodities in two different markets injects more risk for investors. Research by the Fraunhofer Institut found that capital costs for renewable energy investments are significantly lower in countries using feed-in tariffs than in those countries using policies that create higher risks of future return on investment.²⁸³ The European Commission concluded that feed-in tariffs are more effective than quota-based systems like RPSs.²⁸⁴

Feed-in tariffs feature government-established fixed prices. Rickerson and Grace argue that feed-in tariffs create as much competition as RPS REC policies—the competition is just directed via a different mechanism.²⁸⁵ RPS policies create a market for RECs, competitively rewarding renewable energy projects through the sale price of RECs. Developers and investors want the REC to be priced so as to fill the gap between what is needed to attract investors to the sector via a healthy return on investment and the current wholesale transaction price for the generator's electricity alone.

Feed-in tariffs, however, set and guarantee higher electricity rates; investors compete to build the most cost-effective renewable energy projects and therefore receive the highest return on investment. With feed-in tariffs, the government sets the price and guarantees interconnection and contract security, while the market determines the amount of renewable energy projects put into operation at that price level. Feed-in tariffs, when successfully implemented, create a race to produce the least expensive and most efficient projects. The lower the project cost, the higher the return on investment guaranteed by the feed-in tariff rates.

B. Feed-in Tariff Concepts Developed in the United States

Feed-in tariffs have not historically been sanctioned in the United States. The most prevalent renewable energy policy enacted by states is the RPS.²⁸⁶ The two are similar to the extent that they only qualify renewable power that is actually produced, contrary to SBCs, which can subsidize all sorts of development ventures, whether or not they ever produce renewable power. The feed-in tariff does this by actually linking the renewable subsidy to the price paid for

283. HELD ET AL., *supra* note 258, at 26.

284. *Id.*

285. See RICKERSON & GRACE, *supra* note 253.

286. Rickerson et al., *supra* note 256, at 74.

renewable power, while the RPS does this by creating a separate tradable renewable attribute, or REC.

However, the momentum and impact of European feed-in tariff policies have dwarfed RPS initiatives in the United States, and some U.S. states have begun to propose legislation and adopt policies similar to European feed-in tariffs.²⁸⁷ The Solar Electric Power Association issued a report in late 2008 urging utilities to adopt feed-in tariffs,²⁸⁸ apparently oblivious to the legal pitfalls and ramifications set forth in the next sections. As many as ten states have introduced actual feed-in tariff legislation, while a handful of others are considering feed-in tariff policies. In addition, a federal feed-in tariff has been proposed by Representative Jay Inslee (D-Wash.).

1. Inslee's Federal Proposal

In the spring of 2008, Congressman Inslee introduced federal feed-in tariff legislation which would guarantee uniform interconnection standards, provide for a mandatory twenty-year purchase requirement, and set up rate recovery through a national SBC.²⁸⁹ According to a recent analysis,

[u]nder the proposed law, the Federal Energy Regulatory Commission (FERC) would set standards for the priority interconnection and transmission of power from new “renewable energy facilities,” which include renewable energy facilities 20 MW or less. The FERC and the states would then be required to implement these standards within their own respective areas of jurisdiction when renewable energy facility owners request interconnection. The bill would then require all electric utilities in the US to enter into fixed-rate, 20-year power purchase agreements at the request of any new renewable energy facility owner. The FERC would set minimum national [renewable energy payment] rates at levels designed to provide for full cost recovery, plus a 10% internal rate of return on investment, for commercialized technologies under good resource conditions. [Renewable energy payment] rates would be differentiated on the basis of energy technology, the size of the system, and the year that the system was placed in service. Utilities would earn any associated [Renewable Energy Credits] (RECs) in order to help meet RPS requirements. As with interconnection, the FERC and the states would each

287. *Id.*

288. Ethan Howland, *Utilities, Solar Developers Should Seek New Procurement Approaches*, *Report Says*, *ELECTRIC UTIL. WEEK*, Dec. 15, 2008, at 28.

289. Jim Peirobon, *US Rep. Inslee Introduces Renewable Energy Pricing Legislation, Bill Tackles Viability of Federal Pricing Head-On*, *RENEWABLEENERGYWORLD.COM*, June 27, 2008, <http://www.renewableenergyworld.com/rea/news/story?id=52899>; Home Energy Generation Act, H.R.729, 110th Cong. (1st Sess. 2007).

implement the rules of the Inslee bill for all renewable energy facilities that fall within their respective regulatory jurisdictions. The bill would [further] facilitate cost recovery through a private renewable energy utility organization (called, “RenewCorps”) that would be independent, yet subject to FERC oversight. Utilities would be reimbursed by RenewCorps for the additional cost of their power purchases, plus all costs associated with interconnection and network upgrades needed to accommodate these new facilities. To reimburse utilities, RenewCorps would raise revenues through a regionally partitioned national system benefits charge on every electric customer in the US.²⁹⁰

Inslee’s proposal combines feed-in tariffs with RPS and system benefit charge concepts similar to state programs to date.²⁹¹ This proposed legislative scheme allows a twenty-year tariff payment at prescribed rates federally established and differentiated by technology.²⁹² These payments would be linked to new, federally-created RECs.²⁹³ There would also be linkage to a new federal system benefits charge.²⁹⁴ Therefore, the federal scheme would co-opt several state concepts.

Inslee’s proposal amends the FPA and repeals section 210 of PURPA.²⁹⁵ Facilities choosing the feed-in tariff would not be eligible for other federal tax incentives or state RECs.²⁹⁶ Inslee has asserted that the purpose of the bill is to create investment security for renewable energy project developers.²⁹⁷ Inslee has noted that there are significant barriers to passing a national feed-in tariff statute, including inequalities that could result from how federal funds are allocated to individual states.²⁹⁸ The proposal has not yet advanced to law.

290. WILSON RICKERSON ET AL, FEED-IN TARIFFS AND RENEWABLE ENERGY IN THE USA – A POLICY UPDATE 12 (North Carolina Solar Center 2008).

291. *See* Home Energy Generation Act.

292. *Id.*

293. *Id.*

294. *Id.*

295. *Id.*

296. Renewable Energy Jobs and Security Act, H.R. 6401, 110th Cong. (2008).

297. Press Release, Jay Inslee, Representative, House Bill Would Guarantee Rates for Clean-Energy Generators (June 26, 2008), *available at* http://www.house.gov/apps/list/press/wa01_inslee/renewableenergypayments.shtml.

298. *See* WILSON RICKERSON ET AL., FEED-IN TARIFFS AND RENEWABLE ENERGY IN THE USA—A POLICY UPDATE 11–14 (2008).

2. State Legislative Action

There are several state feed-in tariff style incentives proposed and on the horizon but not yet enacted. These are outlined below.

California – The California Public Utilities Commission (CPUC) established the California Solar Initiative.²⁹⁹ This initiative is a performance-based incentive where solar energy generators can receive a five-year contract worth up to \$0.39 per kWh for power sold.³⁰⁰ The program is similar to a German-style feed-in tariff, but is shorter in contract term and well below the rates in Germany.³⁰¹ The incentive amounts decrease over time after legislative targets for installed solar capacity are met.³⁰²

In February of 2008, the CPUC adopted the Onsite Renewable Generation feed-in tariff, which provides a ten-, fifteen-, or twenty-year contract for renewable energy systems smaller than 1.5 MW in capacity.³⁰³ The contract price is based on the average cost of electricity production, adjusted for the spot market and time of delivery value.³⁰⁴ There are three additional proposals in the California legislature that would expand feed-in tariff options for renewable energy generation.³⁰⁵

In December 2008, “the presiding commissioners accepted the California Energy Commission (CEC) staff’s recommendation that California implement a system of feed-in tariffs.”³⁰⁶ A final report was prepared in 2009 for approval by the full CEC.³⁰⁷ “The recommendation calls on the Public Utility Commission to . . . implement a system of feed-in tariffs for projects up to 20 MW in size.”³⁰⁸ The CEC also recommended that the CEC and CPUC continue to evaluate feed-in tariffs for projects greater than 20 MW.³⁰⁹

299. Cooler Planet, California Solar Power Rebates (Sept. 29, 2007), <http://solar.coolerplanet.com/Articles/california-solar-power-rebates.aspx>.

300. *Id.*

301. *Id.*

302. *Id.*

303. RICKERSON ET AL., *supra* note 298, at 4.

304. *See id.*

305. *See id.* app. at 18.

306. Paul Gipe, *CEC Recommends Cost-Based Feed-in Tariff*, WIND WORKS, Jan. 5, 2009, <http://www.wind-works.org/FeedLaws/USA/CECRecommendsCost-BasedFeed-inTariff.html>.

307. KEMA, CALIFORNIA FEED-IN TARIFF DESIGN AND POLICY OPTIONS: FINAL CONSULTANT REPORT 5 (2009).

308. *Id.*

309. *Id.*

Hawaii – The 2007 legislative session in Hawaii saw four proposals for feed-in tariffs.³¹⁰ The bills were not approved, however, and must be reintroduced in the 2009 session.³¹¹ Three of the proposals sought to establish twenty-year contracts at a rate of \$0.70 per kWh for solar systems up to twenty MW in capacity, and the other proposal set the rate at \$0.45 per kWh.³¹² The bills would only have applied the feed-in tariff rates to excess electricity from net-metered systems.³¹³

Michigan – Michigan House Bill No. 5218, the “Michigan Renewable Energy Sources Act,” was introduced on September 15, 2007.³¹⁴ This bill provides that electric utilities must enter into power purchase agreements for a term of not less than twenty years, and must purchase all electricity from eligible electric generators in the state at the rate needed for development plus a reasonable profit, but not less than specified rates.³¹⁵ These rates are the same as Germany’s and would be the highest in North America.³¹⁶ These rates are:

- \$0.10 per kWh for electricity from hydroelectric projects less than 500 kW;
- \$0.145 per kWh for electricity from biogas projects less than 150 kW;
- \$0.19 per kWh for electricity from geothermal projects less than five MW;
- \$0.65 per kWh for electricity from rooftop solar installations less than thirty kW;
- \$0.71 per kWh for electricity from solar cladding less than thirty kW;
- \$0.105 per kWh for electricity from commercial wind projects; and
- \$0.25 per kWh for electricity from small wind turbines.³¹⁷

The Michigan bill has been referred to committee and is on hold while Renewable Portfolio options are being considered.³¹⁸ Support

310. RICKERSON ET AL., *supra* note 301, at 8.

311. *Id.*

312. *Id.*

313. *Id.*

314. H.B. 5218, 2007–08 Leg. Sess. (MI. 2007).

315. *Id.*

316. See U.S. Dept. of Energy, Energy Efficiency & Renewable Energy: News, First Feed-in Law Proposed in Michigan (September 24, 2007), http://www.eere.energy.gov/states/news_detail.cfm/news_id=11316.

317. *Id.*

for the bill exists in the House, but there seems to be opposition in the Senate.³¹⁹

Illinois – Illinois sought to adopt a program similar to the Michigan proposal in December of 2007.³²⁰ However, the bill, HB 5855, was instead amended to provide only solar generators a net-metering rate of 200% the retail rate for electricity.³²¹ The proposal would also allow utilities to enter into twenty-year contracts with renewable energy generators.³²² The bill could be introduced as part of a net-metering bill in the next legislative session.³²³

Minnesota – State Representative David Bly introduced bill HF3537.³²⁴ The bill is similar to the Michigan proposal, except that in order to receive the incentive, the generators must be majority-owned by Minnesota residents, limited liability companies, non-profits, governments, tribal councils, or electric cooperatives.³²⁵ This language has dormant commerce clause implications as well as the PURPA implications discussed below. The measure was opposed by utilities and did not make it out of the House.³²⁶

Rhode Island – In 2008 a bill was introduced which was similar to the Michigan bill, offering a twenty-year contract at rates that vary depending on the capacity of the generator.³²⁷ For example, wind energy projects between 20 and 50 MW receive \$0.105 per kWh and systems under twenty MW receive \$0.115 per kWh.³²⁸ Other technologies receive rates 1.15 times the avoided cost rates. The bill is still being negotiated.³²⁹

3. Other States Considering Feed-in Tariffs

Florida – In December 2008, the Gainesville, Florida City Commission approved a tariff of \$0.32 per kWh under Gainesville

318. See RICKERSON ET AL., *supra* note 301, at 5.

319. *Id.*

320. *Id.*

321. *Id.* at 6.

322. *Id.* at 18 app.1.

323. *Id.* at 6.

324. See RICKERSON ET AL., *supra* note 301, at 6.

325. *Id.* at 6 n.9.

326. Charley Shaw, *2008 in Review*, ST. PAUL LEGAL LEDGER, Jan. 15, 2009, <http://www.legal-ledger.com/item.cfm?recID=11320>.

327. RICKERSON ET AL., *supra* note 301, at 16 app. 1.

328. *Id.*

329. *Id.*

Regional Utilities' proposed feed-in tariff program.³³⁰ The program pays both residential and business customers the \$0.32 rate.³³¹ The city launched the program in March of 2009.³³²

Indiana – State Representative Matt Pierce introduced HB 1622, the “Advanced Renewable Energy Tariffs Act,”³³³ into the Indiana General Assembly in January 2009.³³⁴ The bill received first reading on January 16, 2009.³³⁵ HB 1622 is patterned after the Michigan bill.³³⁶

Vermont – In 2008, the Vermont Sustainably Priced Energy Enterprise Development Program was amended to allow projects less than one MW in capacity to enter into contracts fifteen years in length, at prices adequate to promote renewable resources.³³⁷ This program *could* be developed into a feed-in tariff if the contract rates are high enough to promote renewable resource development.³³⁸ So while the legislation has been enacted, it is not formally a feed-in tariff, although it has the potential to perform as one.

Wisconsin – The Governor's Task Force on Global Warming recommended adopting an advanced renewable tariff for projects 15 MW in capacity and smaller.³³⁹ The rates recommended are cost plus profit rates.³⁴⁰ Wisconsin's Public Service Commission opened a further investigation of Advanced Renewable Tariff Development, essentially the feed-in tariff, in January of 2009.³⁴¹

It becomes more important to understand the legal implications of a feed-in tariff structure as it is being increasingly considered in the

330. Paul Gipe, *Gainesville Moves Rapidly to True Solar Tariff*, WIND WORKS, Jan. 5, 2009, <http://www.wind-works.org/FeedLaws/USA/GainesvilleMovesRapidlyToTrueSolarTariff.html>.

331. Uclia Wang, *Budget Shortfalls Could Shrink States' Solar Incentives*, GREENTECHSOLAR, Jan. 14, 2009, <http://www.greentechmedia.com/articles/read/budget-shortfalls-could-shrink-states-solar-incentives-5524/>.

332. *Id.*

333. H.B. 1622, 116th Gen. Assem., 1st Reg. Sess., (Ind. 2009), *available at* <http://www.in.gov/legislative/bills/2009/PDF/IN/IN1622.1.pdf>.

334. Paul Gipe, *Indiana Rep. Introduces Feed Law Bill & Wisconsin PSC Opens Docket on Renewable Tariffs*, RENEWABLEENERGYWORLD.COM, Jan. 21, 2009, <http://www.renewableenergyworld.com/rea/news/article/2009/01/indiana-rep-introduces-feed-law-bill-wisconsin-psc-opens-docket-on-renewable-tariffs-54546>.

335. H.B. 1622.

336. Gipe, *supra* note 334.

337. RICKERSON ET AL., *supra* note 301, at 10.

338. *Id.*

339. *Id.* at 11.

340. *Id.*

341. Paul Gipe, *Wisconsin PSC Opens Docket on Renewable Tariffs*, WINDWORKS, Jan. 16, 2009, <http://www.wind-works.org/FeedLaws/USA/WisconsinPSCOpensDocketonRenewableTariffs.html>.

United States. With a federalist system, especially for electric power, there are bright jurisdictional lines between state and federal legal authority over these transactions.

C. Federal Preemption of State Authority for Wholesale Rates

Sections 205 and 206 of the FPA empower FERC to regulate rates for the interstate and wholesale sale and transmission of electricity.³⁴² In doing so, the act bestows upon FERC broad power to shape the energy market and affect all stakeholders: generators, retailers, and consumers. The act creates a “bright line” between state and federal jurisdiction with wholesale power sales falling on the affirmative federal side of the line,³⁴³ and FERC jurisdiction preempts state regulation of wholesale power transactions and prices.

Where federal law occupies the field and there is evidence of a pervasive federal scheme in a given area, by inference, courts will find state or local legislation preempted . . . Even where there is no congressional intent evident to federally occupy a field, the conflict principle requires that a court strike inconsistent state or local law. State regulation is not allowed to veto the regulatory scheme of a superior level of government. Correspondingly, courts hold that where state and federal laws complement each other, there is no preemption.³⁴⁴

342. Federal Regulation and Development of Power (“Federal Power Act”), 16 U.S.C. §§ 824d–e.

343. *Id.* at 1066, *aff’d*, *Morgan Stanley Capital Group v. Pub. Util. Dist. No. 1 of Snohomish County, Wash.*, 128 S.Ct. 2733 (2008). The Supreme Court in its decision criticized the reasoning of the Ninth Circuit Court of Appeals decision, but nonetheless agreed with and upheld the FERC has exclusive authority, and responsibility, to review long-term power crises, wholesale market manipulation by a party to the power sale contract that would negate existing contract protections, and wholesale rates. *Morgan Stanley Capital Group*, 128 S.Ct. at 2749. The Supreme Court criticized the reasoning of the Ninth Circuit instituting a rate “zone of reasonableness” on FERC determinations, which would be “a reinstatement of cost-based rather than contract-based regulation.” *Id.* at 2748. The Court did not want to impose this cost calculation burden on FERC regarding every market-based contract. *Id.* at 2749. The 5-2 decision by Justice Scalia upheld the tougher “public interest” standard to only abrogate contracts in those “extraordinary circumstances where the public will be severely harmed,” as articulated by the *Mobile-Sierra* doctrine, with a new affirmative twist regarding market manipulation. *Id.* The FERC was told to “amplify or clarify its findings.” *Id.* at 2750. Market turmoil or chaos, even rendering a power market dysfunctional, alone are not sufficient to negate existing wholesale power contracts, which are designed, in part, to hedge against certain market risks. Of the four wholesale contracts at issue in this litigation, one with Dynegy had already expired by its terms at the time of this Supreme Court 2008 decision, and three with Shell, PPM and Sempra had not yet terminated. For a discussion of the California and Western energy crisis that spawned this litigation, see Steven Ferrey, *Soft Paths, Hard Choices: Environmental Lessons in the Aftermath of California’s Electric Deregulation Debacle*, 23 VA. ENVTL. L.J. 251 (2004).

344. Ferrey, *supra* note 69, at 113–14.

The North American power grid is composed of many individual pieces owned by the local transmission companies, which operate under the overlapping jurisdiction of fifty-five state and provincial government agencies, as well as three national regulatory authorities. [Within the United States,] FERC regulates entirely wholesale power transactions. The Federal Power Act defines “sale at wholesale” as any sale to any person for resale. FERC also regulates power generation to a limited degree, power transmission in interstate commerce, and interstate power sales.³⁴⁵

FERC jurisdiction is plenary and extends to all sales in interstate commerce.³⁴⁶ FERC does not regulate the local distribution of power, power solely in intrastate commerce, or the self-generation and use of power.³⁴⁷

There is no statutorily or judicially imposed threshold amount of interstate sale of power, which triggers FERC jurisdiction. Although the amount of power an electric utility may place in interstate commerce is *de minimis* compared to the same utility’s sales in intrastate commerce, FERC may assert its regulatory authority over such a utility. If a small amount of interstate power is commingled with intrastate power, the entire amount of power becomes “interstate” for purposes of vesting FERC with the authority to exercise jurisdiction. Once FERC exercised jurisdiction over a utility, the entire wholesale structure of the entity’s operations becomes subject to FERC regulation.³⁴⁸

There is no doubt that renewable power sales are designed to affect (1) wholesale power transactions and (2) interstate power transactions. Both of these are subject to exclusive federal jurisdiction; state authority is preempted. Recent jurisprudence has accentuated the exclusivity of FERC’s power in not only setting “just and reasonable rates” but also exclusively ensuring the performance of the energy market. As the Ninth Circuit has remarked, and the Supreme Court confirmed, when combined with federal preemption precedent, energy market regulatory reforms have contributed to “a massive shift in regulatory jurisdiction from the states to the FERC.”³⁴⁹

345. Ferrey, *supra* at note 68, at 164.

346. N. States Power Co. v. Minn. Pub. Util. Comm’n, 344 N.W.2d 374, 378 (Minn. 1984).

347. Conn. Light & Power Co. v. Federal Power Comm’n, 324 U.S. 515, 523 (1945); City of Batavia v. Fed. Energy Regulatory Comm’n, 672 F.2d 64, 68 n.2 (D.C. Cir. 1982) (noting that the FERC regulates wholesale transactions and states regulate retail transactions).

348. Ferrey, *supra* note 69, at 109–10.

349. *Pub. Util. Dist. No. 1*, 471 F.3d at 1066; *see also* Entergy La., Inc., v. La. Pub. Serv. Comm’n, 539 U.S. 39, 47 (2003) (noting that the filed rate doctrine applies to the states through federal preemption).

D. The Filed-Rate Doctrine

If a utility or independent power producer is subject to FERC jurisdiction and regulation, state regulation of the same operational aspects is preempted as a matter of federal law. Principles of preemption require a state regulatory agency to accept and pass through in retail rates all cost items deemed by FERC to be “just and reasonable,” and which are otherwise allowed. Therefore, a FERC determination regarding any aspect of a wholesale price is universally binding.

The so-called “filed-rate doctrine” holds that state regulatory commissions may not second-guess or overrule on any grounds a wholesale rate determination made pursuant to federal jurisdiction. The Supreme Court in 1986 and again in 1988 [and 2003], upheld the filed-rate doctrine.³⁵⁰

In their 2003 decision, the Supreme Court clarified that there is little residual “prudency” authority, as initially supposed by some states, reserving a state role in determining the ultimate choice of certain suppliers in wholesale power market transactions.³⁵¹

This final point is important. Until 2003, some states presumed that the *Pike County* prudency concept, which recognized utility cost recovery for imprudent decision making, would allow a state to determine from whom power should prudently be obtained, and would allow states to modify or overrule FERC-approved wholesale market orders or rules—under the guise of supervising the prudent operation of the integrated power markets in their states.³⁵² This theory of residual authority to overrule company allocation of costs was deflated by the Supreme Court in its 2003 *Entergy* opinion.³⁵³ The Court found that states are unable to tamper, directly or indirectly, with wholesale market operations approved by a FERC order or operating subject to FERC-approved tariffs.³⁵⁴ States’ deliberate attempts to design renewable power or carbon regulation (such as RGGI regulations) to tilt the wholesale market operation, power pricing, and dispatch order in wholesale markets operating pursuant to FERC-approved tariffs runs counter to the 2003 opinion of the Supreme Court in *Entergy*.

350. Ferrey, *supra* note 69, at 114–15.

351. *Entergy La.*, 539 U.S. at 39.

352. See *Pike County Light & Power Co. v. Pa. Pub. Util. Comm’n*, 465 A.2d 735, 738 (Pa. Comm. Ct. 1983).

353. *Entergy La.*, 539 U.S. at 49.

354. *Id.* at 47.

Pursuant to the filed-rate doctrine, the filed federal rate becomes “the legal rate.”³⁵⁵ Outside the regulatory scheme, the filed rate cannot be attacked on the grounds that it was the result of improper conduct.³⁵⁶ “[T]he filed rate doctrine bars all claims – state and federal – that attempt to challenge the terms of a tariff that a federal agency has reviewed and filed.”³⁵⁷

Bad conduct or wrongdoing by a party does not set aside the filed-rate doctrine.³⁵⁸ FERC adoption of market-based rates in a state does not obviate the filed-rate doctrine.³⁵⁹ Pursuant to EP Act 2005, FERC codified new anti-fraud rules for natural gas and electricity markets in Order No. 670, covering schemes to defraud, make untrue statements of a material fact or omit material facts, or to engage in any fraud or deceit upon any entity.³⁶⁰ Despite these new anti-fraud rules, even an “unlawful” act of fraud does not negate the filed-rate doctrine.³⁶¹ FERC, through the regulatory scheme, is the only party that has a remedy when fraud has been committed.³⁶² Any conflicting state determinations are barred.³⁶³

Feed-in tariff rates above avoided cost result in at least a temporary, and perhaps longer, increased cost of electricity. And here lies the conundrum: Does this conflict with either the requirements of PURPA, which are part of the FPA, or the general

355. *Mont.-Dakota Utils. Co. v. Nw. Pub. Serv. Co.*, 341 U.S. 246, 256 (1951); *Keogh v. Chi. & Nw. Ry.*, 260 U.S. 156, 163 (1922).

356. *Ark. La Gas Co. v. Hall*, 453 U.S. 571, 577–78 (1981).

357. *People of Cal. ex rel. Lockyer v. Dynegy*, 375 F.3d 831, 853 (9th Cir. 2004) (internal citations omitted); *see also* *Transmission Agency of N. Cal. v. Sierra Pac. Power Co.*, 295 F.3d 918, 929 (9th Cir. 2002).

358. *See e.g., Keogh*, 260 U.S. at 163 (1922) (“The rights as defined by the tariff cannot be varied or enlarged by either contract or tort of the carrier.”); *Square D Co. v. Niagara Frontier Tariff Bur.*, 476 U.S. 409, 417 (1986) (hearing challenge to collusion to set higher rates); *Wegoland, Ltd. v. NYNEX Corp.*, 27 F.3d 17, 20 (2d Cir. 1994) (holding that there is no fraud exception to filed rate doctrine); *H.J. Inc. v. Nw. Bell Tel. Co.*, 954 F.2d 485, 492 (8th Cir. 1992) (reasoning that intentional misconduct of a party is not an exception to filed rate doctrine).

359. *See Dynegy*, 375 F.3d at 853.

360. FERC Prohibition of Energy Market Manipulation, 114 F.E.R.C. ¶ 61,047 (2006).

361. *See e.g., Wegoland*, 27 F.3d at 20 (noting that while plaintiffs “argue that there should be an exception to the filed rate doctrine when there are allegations of fraud . . . every court that has considered the plaintiffs’ argument has rejected the notion that there is a fraud exception to the filed rate doctrine”).

362. *Taffett v. S. Co.*, 967 F.2d 1483, 1490 (11th Cir. 1992); *Pub. Util. Dist. No. 1 of Snohomish, County Wash. v. Dynergy Power Mktg Inc.*, 384 F.3d 756, 761 (9th Cir. 2004).

363. *In re: Western States Wholesale Natural Gas Antitrust Litigation*, Slip Op., Case 2:03-cv-01431-PMP-PAL MDL-1566, May 15, 2008.

rate-setting requirements of FERC under the FPA?³⁶⁴ A series of court decisions over the past two decades makes this a very appropriate question under the Supremacy Clause of the Constitution.

PURPA was designed to promote renewables while protecting consumers from artificially increasing costs of electricity resulting therefrom.³⁶⁵ The promotion of renewable energy is premised on renewable energy generators receiving only the utility's average avoided cost.³⁶⁶ Thus, retail energy consumers should be indifferent to the amount of renewable power purchased at these rates, because the rates are identical to the utility's costs. PURPA, therefore, specifically provides that no rule requiring a utility to purchase energy from a QF "shall provide for a rate which exceeds the incremental cost to the electric utility of alternative electric energy."³⁶⁷ "Alternative" in this context does not refer to renewable energy sources but rather to electricity produced by any generator but that utility.

Congressional hearings emphasized the use of avoided cost methodologies to determine the cost of acquiring alternative electric power, and showed the desire that no particular electricity producer would subsidize the inefficiency of another.³⁶⁸ These congressional hearings also illustrated that Congress' intent was to avoid promoting alternative energy sources beyond the point of cost-effectiveness. This desire was evident in both the House and Senate. During hearings on PURPA, Senator Percy stated that "[i]t would be wrong to subsidize small [power] producers at the expense of other customers."³⁶⁹ "Senator Durkin added during floor debate that

364. Federal Regulation and Development of Power ("Federal Power Act"), 16 U.S.C. 824a (2006).

365. Ferrey, *supra* note 69, at 17.

366. Federal Regulation and Development of Power ("Federal Power Act"), 16 U.S.C. § 824a-3(b) (2006) (providing that a rate may not "exceed[] the incremental cost to the electric utility of alternative electric energy"); 18 C.F.R. 292.304(a)(2) (providing that no electric utility shall "pay more than the avoided costs for purchases").

367. *See* Windway Techs., Inc v. Midland Power Coop., 2001 WL 1248741 at *4 (N.D. Iowa 2001) (quoting 16 U.S.C. § 824a-3(b)).

368. Miles, *supra* note 73, at 1284 n.99 (citing Public Utility Rate Proposals of President Carter's Energy Program: Hearings Before the Subcomm. on Energy Conservation and Regulation of the Senate Comm. on Energy and Natural Resources, 95th Cong., 1st Sess. pt. 1, at 189 (1977)).

369. *Id.* at 1285 (quoting 123 CONG. REC. 25,848 (1977) (statement of Sen. Percy)).

utilities should be required to set purchase rates for hydroelectric generators at cost, rather than at a subsidized rate.”³⁷⁰

1. The Green Energy Limited Exemption

Only two very limited exceptions legally allow utilities to pay in excess, or to have states mandate that utilities pay in excess, of avoided costs to a QF for renewable energy produced and delivered. The first exception applies when the excess cost is for a Green Energy Program in which utility customers individually voluntarily agree to higher rates covering the costs above the utility’s avoided cost.³⁷¹ A cost-recovering and appropriately-priced green electricity purchase would likely be prohibitively expensive to many consumers, compared to the rates for conventional purchase of electricity.³⁷² For example, voluntary programs consisting of RPS-eligible RECs and future RECs can vary in cost from \$0.014 per kWh to, in Massachusetts, \$0.50 per kWh.³⁷³

2. The Net Metering Exemption

The second exception applies to net metering. On March 28, 2001, FERC held that state net metering decisions were not preempted by federal law, because no sale occurs when an individual homeowner, farmer, or similar entity installs distributed generation and accounts for its dealings with the utility through the practice of netting.³⁷⁴ FERC deemed that a transfer of title to power does not constitute a “sale.”³⁷⁵

Oregon has gone even further. The Oregon Public Utilities Commission (OPUC) in 2008, ruled that its RPS program applies to an entity that: generates renewable power; is located on the customer-

370. *Id.*

371. The Florida Public Service Commission found that a Green-Pricing program does not violate PURPA and its implementing rules. However, the Florida PSC made it clear that the Commission did not answer the question of whether circumstances might exist where prices in excess of avoided cost could be borne by the general body of ratepayers, or the question of the amount the utility or its green electricity customers could pay. In re Fla. Power & Light Co., 219 P.U.R.4th 46, 49 (Fla. Pub. Serv. Comm’n, 2002).

372. A state feed-in tariff program could be implemented as a “green electricity” purchase but would have to include RECs in those half of the states that have them and fit into state regulatory structures, such as existing renewable portfolio standard regulations. Voluntary programs; however, would not likely create the aggressive investment market climate desired by a feed-in tariff due to uncertainty that a voluntary program could be discontinued at any time.

373. NSTAR Green, *supra* note 236.

374. Steven Ferrey, *Net Metering*, in 1 ENCYCLOPEDIA OF ENERGY ENGINEERING AND TECH. 1096, 1098 (Barney L Capehart ed., 2007).

375. *Id.*

generator's premises; can operate in parallel with an electric utility's existing transmission and distribution facilities; and is intended primarily to offset some of the customer-generator's own electricity requirements.³⁷⁶ OPUC held that a customer-generator need not be both a customer *and* a generator. The "customer-generator" label could apply to a customer who hired a third party to own or install and operate on the customer's premises a self-generation unit that supplied power behind the meter.³⁷⁷ No limitation was placed on third-party ownership, and the sale of such power to the customer-generator was not deemed to be a regulated retail sale of power, because FERC took the position that, under federal law, net metering does not necessarily involve a sale. Thus, because the net-metered transaction between the customer-generator and the utility is not a sale at all, the prior sale from the third-party to the customer-generator was not a "sale for resale."³⁷⁸ The regulated utility is not required in any manner to determine who owns net-metered facilities.³⁷⁹ If the renewable net-metered facility takes advantage of multiple federal and state trust fund subsidies and tax credits and benefits, it is still eligible for net metering.³⁸⁰ The third-party owner of the renewable generation equipment can still collect RECs associated with the sale of power from the net-metered facility.³⁸¹ The ability to quadruple-dip into RECs, net metering, tax incentives, and system benefit trust funds or other subsidies is not uniformly allowed in the states.³⁸²

Eighty percent of the states have electively adopted "net metering," which runs the retail utility meter backwards when a renewable energy generator puts power back to the grid.³⁸³ Net

376. Honeywell Int'l, Inc., Order No. 08-388 at 4-5 (Or. Pub. Util. Comm'n July 31, 2008), available at <http://apps.puc.state.or.us/orders/2008ords/08-388.pdf> (interpreting the definition of a net metering facility under ORS 757.300(1)(d)).

377. *Id.* at 7-8.

378. *Id.* at 10. The Commission relied on the FERC determination in *In re Mid-America Co.*, 94 FERC ¶ 61,340, 62,263 (2001). The Oregon Commission also held that the third-party owner of the net metered generator was not a retail electric service provider under state law because it offered does not generally offer service other than to selected on-premises parties, did not use the utility's distribution system, and did not provide any ancillary services. It also was not a utility and did not have to serve 100 percent of premises load. The regular public utility must serve all other power and back-up needs of the customer. *Id.*

379. *Honeywell Int'l*, *supra* note 376, at 18.

380. *Id.*

381. *Id.* at 19.

382. CORY & SWEZEY, *supra* note 110, at 24.

383. Ferrey, *supra* note 3748, at 1096.

metering can pay the eligible renewable energy source approximately four times more for this power when it rolls backwards at the retail rate than paid to any other independent power generators for wholesale power, and much more than the time-dependent value of this power to the purchasing utility.³⁸⁴ The state positions on net metering are set forth in Table 6.

Table 6: STATE NET METERING REGULATIONS³⁸⁵					
State	Eligible Technologies	Eligible Customers Limits	Size Limitations	Price	Authorization
Arizona	Renewables & cogeneration		≤ 100 kW	Excess* purchased at avoided cost	Ariz. Corp. Comm. Decision No. 52345
California	Solar and wind	Residential and Small Commercial	≤ 10 kW	Excess purchased at avoided cost; month-to-month carryover allowed w/utility consent	Calif. Pub. Util. Code §2827
Colorado	All resources		≤ 10 kW	Excess carried over month-to-month	Pub. Svc. Co. of Colo., Advice Letter 1265; Decision C96-901
Connecticut	Renewables & cogeneration		≤ 50 kW for cogeneration; ≤ 100 kW for renewables	Excess purchased at avoided cost	Dept. of Pub. Util/ Control, Order No. 159

384. *Id.*

385. *Id.* at 1098–1100.

Idaho	Renewables & cogeneration	Residential and small commercial	≤ 100 kW	Excess purchased at avoided cost	ID PUC Orders Nos. 16025 (1980); 26750 (1997)
Indiana	Renewables & cogeneration		≤ 1,000 kWh/month	Excess is “granted” to the utility; No purchase of excess	170 IN Admin. Code §4-4, 1-7
Iowa	Renewables		No size limit	Excess purchased at avoided cost	Iowa Util. Bd., Utilities Division Rule §15.11(5)
Maine	Renewables & cogeneration		≤ 100 kW	Excess purchased at avoided cost	Me. PU Code Ch. 36, §§1(A)(18), (19), §4(C)(4)
Maryland	Solar	Residential	≤ 80 kW	Excess carried over to following month	Maryland Art. 78, §54M
Massachusetts	Renewables & cogeneration		≤ 60 kW = Class I Between 60 kW and 1 MW = Class II Between 1-2 MW = Class III ³⁸⁶	Excess purchased at avoided cost	Mass. Gen. Laws c. 164, §1G(g); D.T.E. Order 97-111 Note: ≤ 30 kW 220 CMR §8.04(2)
Minnesota	Renewables & cogeneration		≤ 40 kW	Excess purchased at “average retail utility energy rate”	Minn. Stat. §261B.164(3)
Nevada	Solar and wind		≤ 10 kW	Excess purchased at	Nev. R. Stat. Ch. 704

386. The recent Green Communities Act in Massachusetts provides for Class I, II, III, neighborhood, solar and wind net metering facilities with wind and solar up to 2 MW allowed to net meter. Green Communities Act, S. No. 2768, 185th Leg., Reg. Sess. (Mass. 2007).

				avoided cost; annualization allowed	
New Hampshire	Solar, wind & hydro		≤ 25 kW	PUC may require 'netting' over 12-month period; retailing wheeling allowed for up to 3 customers	
New Mexico	Renewables, fuel cells, micro turbines		≤ 1,000 kW	Excess credited to following month; unused credit is granted to utility at end of 12-month period	NM PUC Order 2847 (11/30/98)
New York	Solar	Residential	≤ 10 kW	Excess credited to following month; unused credit is granted to utility at end of 12-month period	NY Public Service Stat. §66-j
North Dakota	Renewables & cogeneration		≤ 100 kW	Excess purchased at avoided cost	N.D. Admin. Code §69-09- 07-09
Oklahoma	Renewables & cogeneration		≤ 100 kW and annual output ≤ 25,000 kWh	Excess is "granted" to the utility; <u>no</u> purchase of excess	Ok. Corporations Comm. Schedule QF- 2
Pennsylvania	Renewables		≤ 50 kW	Excess purchased at wholesale rate	PECO Rate R-S, Supp. 5 to PA Tariff

					PUC No. 2, Page 43A
Rhode Island	Renewables & cogeneration		≤ 25 kW for larger utilities; ≤ 15 kW for smaller utilities	Excess purchased at avoided cost	PUC Supp. Decision and Order, Docket No. 1549
Texas	Renewables		≤ 50 kW	Excess purchased at avoided cost	Texas PUC, Rule §23.66(f)(4)
Vermont	Solar, wind, fuel cells using renewable fuel, anaerobic digestion	Residential, commercial, and agricultural customers	≤15 kW, except ≤ 100 kW for anaerobic digesters	Excess carried over month-to-month; any residual excess at end of year is "granted" to the utility	Reuse of Net Metering, VT. PSB Docket No. 6181 (April 21, 1999)
Washington	Solar, wind and hydropower		≤ 25 kW	Excess credited to following month; unused credit is granted to utility at end of 12-month period	
Wisconsin	All Resources	All retail customers	≤ 20 kW	Excess purchased at retail rate for renewables, avoided cost for non-renewables	Pub. Svc. Comm. Schedule PG-4
Connecticut	Solar, wind, hydro, fuel cell, sustainable biomass	Residential	No size limit	Not specified	CT Public Act 98-28 (1998)
Illinois (pending)	Solar and wind	All retail customers	≤ 40 kW	Excess carried over month-to-month; any	Ill. Legis. S.B. 1228

				residual excess at end of year is purchased at avoided cost	
Maine	Renewables or other applicable technology		≤ 100 kW	Excess carried over month-to-month; any residual excess at end of 12-month period is eliminated	Me. PU Code Ch. §313 (1998); PUC Order No. 98-621 (December 19, 1998). [35-A MRSA §3210(2)(C)]
Puerto Rico (pending)	Renewables	Residential	≤ 50 kW	Excess carried over month-to-month; any residual excess at end of year is purchased at avoided cost	

*“Excess” refers to the “net excess generation” of electricity by the customer-generator (i.e., generation exceeds consumption) during the billing period.

By turning the meter backwards, net metering effectively compensates the generator at the full retail rate for transferring just the wholesale energy commodity. While most states compensate the generator for excess generation at the avoided cost or market-determined wholesale rate, as Table 7 below shows, some states compensate the wholesale energy seller for the excess at the much higher retail rate.

“[E]lectricity is a unique energy form: It cannot be stored or conserved with any efficiency. Therefore, electricity has substantially different value at different hours of the day, different seasons of the year, and at different places in the utility system.”³⁸⁷

Contrary to this physical reality, net metering and billing treats all power [at all hours] as being tangibly storable [or bankable] and having equal value, when in fact it is not and does not. By ignoring interim actual physical transfers of power occurring at all the minutes and hours of the month, and recognizing only the net balance of the transactions at the end of the month or quarter, net metering assumes all electricity generated and transmitted has equal [average] value.

387. Ferrey, *supra* note 69, at 119.

It is even possible to “game” the system with net metering—selling power to the utility at the netted average retail price in off-peak late evening hours when the customer/generator has no need for the power . . . and the utility has surplus power Other utility ratepayers will be left to make up the revenue deficit that occurs.³⁸⁸

Thus,

[h]ow states treat net energy generation (NEG) is one of the more controversial aspects of net metering. NEG is the net surplus of electricity sold to the utility compared to electricity purchased from the utility over a given (typically monthly) billing period. Some states allow any such surplus to be carried over as a credit against the next month, with some limiting the duration of this carry-over to a year. At the end of the year, the surplus is either forfeited to the utility, or to low-income energy assistance programs administered by the utility (which effectively pay the utility bill of customers who have not paid). Still, other programs allow the customer to receive cash for the NEG.³⁸⁹

The net metering statuses of representative northeast states are set forth in Table 7.

State	Eligible Technology	Eligible Customers Limits	Size Limits	Net Energy Generation (NEG) Reconciliation
Connecticut	Renewables, MSW cogeneration and fuel cells	Commercial and residential customers	•50kW cogeneration •100kW renewables	NEG purchased @ avoided cost
Maine	Renewables, MSW and fuel cells	All customer classes	•100kW	Credited forward monthly; annual NEG granted to utilities
Maryland	Renewables	Commercial, residential and schools	•500kW	Monthly NEG granted to utilities (in flux)

388. *Id.* at 119–20.

389. Ferrey, *supra* note 383, at 1098.

390. *Id.* at 1098-1100.

State	Eligible Technology	Eligible Customers Limits	Size Limits	Net Energy Generation (NEG) Reconciliation
Massachusetts	MSW, renewables, and cogeneration	All customer classes	≤ 60 kW = Class I Between 60 kW and 1 MW = Class II Between 1-2 MW = Class III ³⁹¹	Monthly NEG credited forward
New Jersey	Renewables and fuel cells	Residential and commercial	•2MW	Annualized NEG purchased at avoided cost
New York	Biogas, wind, solar PV	Agricultural and residential only	10-400kW	Monthly credited forward; Annualized NEG purchased at avoided cost
Rhode Island	Renewables, MSW and fuel cells	All customer classes	•25kW (up to 1MW in Narragansett service territory)	Monthly NEG credited forward; Annual NEG granted to utilities

3. Legally Reconciling Feed-in Tariffs

PURPA regulations require that a utility purchase energy from qualifying QF renewable energy sources at avoided cost.³⁹² One way around PURPA might be for surplus payments to be made to the producer based on the capacity, availability, or fact of contract production, not based on the actual quantity of electricity. However, with some regions now making explicit forward capacity payments,³⁹³ even this would draw legal scrutiny. Electricity from a QF must be

391. The recent Green Communities Act, S. No. 2768, 185th Leg., Reg. Sess. (Mass. 2007), provides for Class I, II, III, neighborhood, solar and wind net metering facilities with wind and solar up to 2 MW allowed to net meter.

392. 18 C.F.R. § 292.303(a) (2006).

393. The Independent System Operator of New England awards forward capacity payments through an annual auction and reconfiguration auctions for supplying capacity to the system. See ISO New England, Forward Capacity markets, http://www.isone.com/markets/othrmkts_data/fcm/index.html (last visited Dec. 26, 2009).

purchased at the purchasing utility's avoided cost rate. A "performance-based incentive" could operate like a theoretical feed-in tariff, but could be a separate payment from the power purchase made by the utility either with or without net metering. If the payment were a subsidy and not a long-term energy contract, it could possibly get around the avoided cost ceiling under PURPA. A utility or ratepayer, however, could argue that the requirement acts like an energy contract at inflated prices. Ultimately, a semantic difference may not be enough to survive a constitutional challenge.

A seller of power can be paid appreciably more for its power under a net-metered purchase, as described above, than through a non-net-metered purchase, which increases the price above avoided cost in the same way that feed-in tariffs do. Under some state net metering systems, states can require utilities to pay for net-metered wholesale electricity sales at retail rates, which are significantly above the avoided cost rates (which reflect wholesale rates).³⁹⁴ The excess power, even if transferred back against the utility's wishes, is not a "sale" if the state so determines under net metering rules, and power used on-site is also not a "sale" under the concept that only the net value at the end of the billing period reflects the actual net metered sale.³⁹⁵

Incentives to promote renewable energy that do not fall under PURPA include RPSs, taxes on fossil fuel generation, and tax incentives available to utilities buying renewable energy. These types of renewable energy incentives could be classified as non-rate mechanisms, and therefore would not be subject to maximum avoided cost PURPA restrictions on wholesale power sale prices.³⁹⁶ The EP Act of 2005 and existing state regulations related to reliability and distribution might allow for certain methods of utility cost-recovery through a distribution charge, as FERC does not have authority to regulate local distribution charges. However, this would have to be cleverly structured to pass muster. Production could be metered by the utility, through an automated production tracking system, or through self-reporting.³⁹⁷

394. See *MidAmerican Energy Co. v. Iowa Utils. Bd.*, No. AA3173, 3195, 3196 (Iowa Dist. Ct. May 25, 1999).

395. *Id.*

396. Ferrey, *supra* note 69, at 105.

397. See Renewable Energy Trust, Production Tracking System Monthly Reporting, http://www.masstech.org/IS/green_buildings/tracking.htm (last visited Dec. 26, 2009).

States have hung other charges for conservation or solar incentive trust fund creation on the local distribution charge.³⁹⁸ Similarly, a state could force a utility to implement a separate SBC or create a renewable energy trust fund to reimburse the utility for payments that the utility made above the avoided cost. However, these renewable energy trust funds may also be susceptible to constitutional challenges, depending on Commerce Clause issues with their design.

States have debated the merits of feed-in tariffs, and economists have written about the most effective and efficient feed-in tariff designs.³⁹⁹ However, no one seems to have written about the potential constitutional and statutory barriers to implementing feed-in tariffs in the United States.

E. Key State Efforts Constitutionally Stricken: The California Cases

1. The Ninth Circuit: Independent Energy Producers

In *Independent Energy Producers Association*, the California state utility commission authorized utilities to monitor QFs to determine whether they met federal efficiency standards.⁴⁰⁰ In addition to allowing the monitoring, the state commission allowed the utility to suspend payment to the QF if the utility found that the QF did not comply with the federal standards.⁴⁰¹ The utility was authorized to substitute a lower, alternative rate of only eighty percent of the avoided cost rate in the event that it determined that the QF did not comply.⁴⁰² CPUC's decision was challenged and appealed.⁴⁰³

“In examining the program, the court noted that the ‘underlying motivation behind the CPUC program [was] to lower the rates set . . . [for independent power projects in California] standard offer contracts because [those contracts were] higher than . . . current avoided costs’” due to the unexpected fall of fossil fuel-fired energy costs.⁴⁰⁴ The Court of Appeals further held that a program where the

398. *See supra* Part VI.C.

399. *See, e.g.*, Lesser & Su, *supra* note 264.

400. *See* *Indep. Energy Producers Ass'n v. Cal. Pub. Utils. Comm'n*, 36 F.3d 848, 853 (9th Cir. 1994).

401. *Id.* at 848.

402. Ferrey, *supra* note 69, at 22 n.85.

403. *Indep. Energy Producers Ass'n*, 36 F.3d at 853.

404. Ferrey, *supra* note 69, at 22 n.85 (quoting *Indep. Energy Producers Ass'n*, 36 F.3d at 858).

state determined ultimate renewable energy QF status was preempted by federal law.⁴⁰⁵ CPUC's monitoring program authorized states to make QF status determinations, and only the federal government via FERC has that authority.⁴⁰⁶ "Although the court found that the program violated federal law by allowing utilities to make QF status determinations, the court allowed the utilities to continue to monitor the QFs... as long as the monitoring requirements did not impose an undue burden on the facilities" or their QF status.⁴⁰⁷

In dicta, the court went into the details of how PURPA authorizes states to calculate avoided costs.⁴⁰⁸ This is where the decision will influence and impact any future decision regarding feed-in tariffs. The court stated that the rate paid by utilities for electricity must be determined by calculating the avoided cost that the utility would pay if it had to purchase electricity outside the QF contract price.⁴⁰⁹ Avoided costs must be based on enumerated data regarding the utility's operation cost characteristics and on the availability, usefulness, type, and reliability of the energy or capacity that is purchased.⁴¹⁰ QF efficiency, the court said, is entirely unrelated to the utility's avoided costs.⁴¹¹ The court also commented that PURPA's avoided cost rates are the "statutory ceiling."⁴¹²

Attempts by states to directly or indirectly promote higher wholesale energy prices for certain renewable energy projects have been stricken by the courts.⁴¹³ Promotion of certain types of renewable fuels for power supply, via a price preference above and beyond the FERC-established price of other wholesale power

405. *Indep. Energy Producers Ass'n*, 36 F.3d at 855.

406. *Id.*

407. Ferrey, *supra* note 69, at 22 n.85.

408. *Indep. Energy Producers Ass'n*, 36 F.3d at 854 nn.11 & 12.

409. *Id.* at 857.

410. *Id.*

411. *Id.* Given the impact that efficiency has on the electric grid, a utility would require more capacity from lower efficiency QFs to supply an equal amount of effective generating capacity from an equivalent capacity but higher efficiency QFs. These inefficiencies would require more interconnection points, construction permits and contract negotiations. If a court found efficiency outside the realm of avoided cost calculations then a court may also find some environmental costs to be outside the realm of avoided cost despite the environmental cost language in the *San Diego G&E* case cited below.

412. *Id.*

413. *Id.* (finding no separate basis for the state PUC to act to establish a premium price for renewable low-carbon power projects).

transactions, was found to be inconsistent with the FPA and was stricken.⁴¹⁴

2. The FERC Backstop: Southern California Edison Company, San Diego Gas & Electric⁴¹⁵

FERC also refused to sanction a higher California price for renewable power supply.⁴¹⁶ Under the filed-rate doctrine, any dispute about these matters may not be arbitrated by the state, but is reserved exclusively to federal authority.⁴¹⁷ CPUC ordered two of its investor-owned and regulated utilities, Southern California Edison and San Diego Gas & Electric, to sign long-term fixed-price contracts with QFs to purchase electricity at prices that were competitive with other renewable energy prices, but nonetheless in excess of the utilities' avoided cost.⁴¹⁸ Edison had wholesale electricity supply options available for \$0.04 per kWh or less, while CPUC required renewable QF contracts as high as \$0.066 per kWh.⁴¹⁹

The case went to FERC on challenge.⁴²⁰ FERC ruled that, under PURPA, "states have broad powers under state law to direct the planning and resource decisions of utilities under their jurisdictions. States may, for example, order utilities to build renewable generators themselves, or deny certification of other types of facilities if state law so permits."⁴²¹ The FERC also stated that, "assuming state law permits, [states] may order utilities to purchase renewable generation" as an alternative to requiring the utility to build its own renewable generation.⁴²²

However, the FERC made it clear that PURPA does not permit either the FERC or the states to require a purchase rate that exceeds the utilities' avoided cost.⁴²³ Avoided cost is defined as "the incremental costs to an electric utility of electric energy or capacity or both which, but for the purchase from the qualifying facility or

414. *Id.*

415. *See* S. Cal. Edison Co., 70 F.E.R.C. ¶ 61,215 (1995).

416. *Id.* ¶ 61,125 (1995) (holding the costs of renewable energy not to exceed the market or bid price of all other sources of energy makes ratepayers indifferent as to the procurement of wholesale power).

417. *Miss. Power & Light Co. v. Miss. ex rel. Moore*, 487 U.S. 354, 371 (1988).

418. S. Cal. Edison Co., 70 F.E.R.C. ¶ 61,215 (1995).

419. *Id.* ¶ 61,667.

420. S. Cal. Edison Co., 71 F.E.R.C. ¶ 61,269 (1995).

421. S. Cal. Edison Co., 70 F.E.R.C. ¶ 61,215, ¶ 61,676 (1995).

422. *Id.*

423. *Id.*

qualifying facilities, such utility would generate itself or purchase from another source.”⁴²⁴ The avoided cost process must reflect prices available from all sources able to sell to the utility.⁴²⁵

This concern does not ameliorate over time: The FERC further stated that, “[a]s the electric utility industry becomes increasingly competitive, the need to ensure that the states are using procedures which ensure that QF rates do not exceed avoided cost becomes more critical.”⁴²⁶ This language foreshadowed the FERC EP Act of 2005 regulations removing utility QF purchasing requirements in Day 2 markets.⁴²⁷

The FERC was also careful to point out that its decision did not preclude the possibility that, in setting an avoided cost rate, a state could account for environmental costs of all fuel sources.⁴²⁸ This language leaves open the possibility of “green pricing” options or incentives that include RECs like those in New Mexico and Wisconsin. Of course, a state might also otherwise reimburse a utility for purchases above avoided costs.

3. Ninth Circuit Redux: Public Utility District No. 1 of Snohomish County Washington

The Ninth Circuit also rendered a final key decision.⁴²⁹ While this decision was reworked by the U.S. Supreme Court on appeal⁴³⁰ and remanded to FERC for more clarification or explanation,⁴³¹ it was not overturned. The Court ruled that Congress did not intend that the scope of FERC’s jurisdiction over the interstate sale of electricity at wholesale be determined by a case-by-case analysis of the impact of

424. 18 C.F.R. § 292.101(b)(6) (2009).

425. S. Cal. Edison Co., 70 F.E.R.C. ¶ 61,215, ¶ 61,666 (1995).

426. *Id.* ¶¶ 61,675–76.

427. See New PURPA Section 210(m) Regulations Applicable to Small Power Production and Cogeneration Facilities, Docket No. RM06-10-001; Order No. 688-A, 119 F.E.R.C. ¶ 61,305 (2007) (order on rehearing and clarification).

428. S. Cal. Edison Co., 70 F.E.R.C. ¶ 61,215, ¶ 61,676 (1995).

429. Pub. Util. Dist. No. 1 of Snohomish County Wash. v. Fed. Energy Regulatory Comm’n, 471 F.3d 1053, 1066 (9th Cir. 2006).

430. Morgan Stanley Capital Group v. Pub. Util. Dist. No. 1 of Snohomish County Wash., 128 S.Ct. 2733 (2008). The U.S. Supreme Court in its decision criticized the reasoning of the 9th Circuit court of Appeals decision, but nonetheless agreed with and upheld the FERC has exclusive authority, and responsibility, to review long-term power crises, wholesale market manipulation by a party to the power sale contract that would negate existing contract protections, and wholesale rates.

431. Both *P.U.D. No. 1* and *Morgan Stanley* remanded the case to the FERC. See *Morgan Stanley Capital Group*, 128 S.Ct. 2733 (2008).

state regulation on national interests.⁴³² Instead, Congress meant to draw a bright line between state and federal jurisdiction.⁴³³ State law is not allowed to overrule or supplant federal determinations by adding requirements not consistent with those in federal law.⁴³⁴

By exercising exclusive authority over “just and reasonable” wholesale or interstate rates and terms, FERC ensures that wholesale generators of electric power will charge fair rates to retailers and that wholesale generators receive a fair rate of return, and thus have the incentive to continue to produce and supply power.⁴³⁵ The FPA creates a “bright line” between state and federal jurisdiction, with wholesale power sales falling clearly and unequivocally on the federal side of the line.⁴³⁶ FERC must protect the state and other stakeholders against the state’s own contractual or regulatory actions.

Specifically, the 2000-2001 California/Western area power shortage was significantly linked to California’s restructured power market design and regulation.⁴³⁷ When prices subsequently fell, California attempted to be excused from the very power supply contracts that it had forced into place with reluctant wholesale power suppliers.⁴³⁸ The state’s legal argument was that wholesale power contracts were the exclusive province of FERC, and FERC had not sufficiently policed the wholesale market to ensure that it functioned in the public interest.⁴³⁹

A majority of the Ninth Circuit affirmed this theory.⁴⁴⁰ FERC, as the traditional wholesale power regulator, must protect the state (and other stakeholders) against the state’s own regulatory actions.⁴⁴¹ FERC not only has exclusive authority unaffected by any state actions over wholesale power markets, but also has an ongoing obligation to continually monitor and police these markets against state interference.⁴⁴² As referred to earlier, the Supreme Court confirmed that when combined with federal preemption precedent,

432. Fed. Power Comm’n v. S. Cal. Edison Co., 376 U.S. 205, 215 (1964).

433. *Id.*

434. Granite Rock Co. v. Cal. Coastal Comm’n, 768 F.2d 1077 (9th Cir. 1985).

435. *Pub. Util. Dist. No. 1*, 471 F.3d at 1058.

436. *Id.* at 1066.

437. See Ferrey, *supra* note 17, §§ 10:17.1-9 et seq.

438. *Pub. Util. Dist. No. 1*, 471 F.3d at 1067.

439. *Id.*

440. *Id.*

441. *Id.*

442. *Id.*

energy market regulatory reforms have contributed to “a massive shift in regulatory jurisdiction from the states to the FERC.”⁴⁴³

State law is not allowed to preempt federal determinations by layering on additional requirements not contained in federal law.⁴⁴⁴ The wholesale price determination is reserved exclusively to federal authority.⁴⁴⁵ The filed-rate doctrine extends to non-rate matters as well.⁴⁴⁶ The FPA precludes all state regulation of interstate wholesale power transactions.⁴⁴⁷

From any type of generating source, moving electrons constitute power.⁴⁴⁸ There is no engineering difference in the end product.⁴⁴⁹ It is clear that the state can regulate non-price aspects of the power sale market within state boundaries.⁴⁵⁰ There is mixed jurisprudence on how far a state can go. For example, a New York decision held that a state cannot compel a utility to purchase power from a particular wholesale source,⁴⁵¹ and it also cannot attempt to determine the price of a wholesale transaction, which is exclusively within FERC jurisdiction. According to FERC, it “cannot ascertain . . . any legal basis under which states have independent authority to prescribe rates for sales by QFs at wholesale [to utilities] that exceed the avoided cost cap contained in PURPA.”⁴⁵²

443. *Pub. Util. Dist. No. 1*, 471 F.3d at 1064 (quoting Carmen L. Gentile, *The Mobile-Sierra Rule: Its Illustrious Past and Uncertain Future*, 21 ENERGY L.J. 353, 373 (2000)); see also *Entergy La., Inc. v. La. Pub. Serv. Comm’n*, 539 U.S. 39 (2003).

444. *Granite Rock Co. v. Cal. Coastal Comm’n*, 768 F.2d 1077 (9th Cir. 1985).

445. *Fed. Energy Regulatory Comm’n v. Mississippi*, 456 U.S. 742, 765 (1982).

446. The Supreme Court extends the filed-rate doctrine generally to include most aspects of federal-state utility regulation. Moreover, the filed rate doctrine is not limited to “rates” per se: “our inquiry is not at an end because the orders do not deal in terms of prices or volumes of purchases.” *N. Natural Gas Co. v. State Corp. Comm’n of Kan.*, 372 U.S. 84, 90–91 (1963). *Nantahala Power & Light Co. v. Thornburg*, 476 U.S. 953, 966–67 (1986).

447. *Nantahala Power & Light Co.*, 476 U.S. at 966 (noting the “exclusive jurisdiction vested by Congress in FERC over the regulation of wholesale utility rates”); *Miss. Power & Light Co. v. Miss. ex rel. Moore*, 487 U.S. 354, 371 (1988) (“FERC has exclusive authority to determine the reasonableness of wholesale rates.”); accord *Miss. Indus. v. Fed. Energy Regulatory Comm’n*, 808 F.2d 1525, 1535–49 (D.C. Cir. 1985).

448. Steven Ferrey, *Inverting Choice of Law in the Wired Universe: Thermodynamics, Mass and Energy*, 45 WM. & MARY L. REV. 1839, at 1908–1912.

449. See Ferrey, *supra* note 17, § 10:79.

450. See *S. Cal. Edison Co.*, 71 F.E.R.C. ¶ 61.269 (1995)

451. *Consol. Edison Co. v. N.Y. Pub. Serv. Comm’n*, 472 N.E.2d 981, 982 (1984).

452. *Conn. Light & Power Co.*, Docket No. EL93-55-000, 70 F.E.R.C. ¶ 61,012, ¶ 61,029 (1995) (order granting permission for declaratory order). This case involved a QF selling to a utility. In this opinion, FERC further articulated that if the seller was not a QF under PURPA, the sale would still be jurisdictional to FERC based on its exclusive authority under the Federal Power Act.

VII. CONSTITUTIONAL CONCLUSION

Federal case law and FERC precedent indicate that PURPA and the FPA prevent utilities from being *mandated* or *required* to purchase renewable energy above their avoided cost for wholesale purchases.⁴⁵³ Even state feed-in tariff legislation cannot mandate a wholesale electric purchase at a rate per kWh above the avoided cost under principles of federal preemption.⁴⁵⁴ Any theoretical feed-in tariff proposal, in order to be effective, would have to require prices well above purchasing utilities' avoided costs, and therefore would be subject to a Federal Power Act challenge by ratepayers or utilities.

PURPA regulations and the FERC provide that they do not limit the ability of parties to negotiate agreements for rates and terms different from those called for in the regulations.⁴⁵⁵ However, a situation where utilities voluntarily agree to purchase power at a rate clearly exceeding their wholesale avoided cost would also be open to legal challenge as "imprudent" under the FPA or its PURPA amendments by other parties, such as industry or consumer groups, if the latter are consequently forced to pay a higher retail rate for electricity. Furthermore, it is unclear that voluntary utility participation, at the utility's own cost and risk, would provide the long-term investment certainty desired from a feed-in tariff incentive program.

The alternative would be to amend the FPA to allow states to require purchase of renewable energy at rates above avoided cost. Another option would be a federally mandated RPS or renewable energy requirement. However, a federal renewable standard might not result in the type of long-term prices that renewable energy generators enjoy in Europe.

Of particular importance, the electricity rate increases associated with existing state RPS policies are generally equal to one percent or less so far, and thus are priced competitively with fossil fuel-fired

453. *See supra* note 423 and accompanying text.

454. Some commentators have suggested that if a state challenge to PURPA went to the current US Supreme Court, it is possible, given the current justices, that PURPA would be ruled unconstitutional in favor of greater State autonomy over electric rates. *See Fed. Energy Regulatory Comm'n v. Mississippi*, 456 U.S. 742, 777 (1982) (O'Connor, J., concurring in part and dissenting in part) (noting that the majority was wrongly persuaded that PURPA "does not intrude impermissibly into state sovereign functions").

455. 18 C.F.R. § 292.301(b)(1) (2009).

generation.⁴⁵⁶ Thus, in most states, there is not an obvious need for higher feed-in tariffs.

Nonetheless, grafting onto American constitutional law a feed-in tariff for renewable power, at above the typical wholesale market cost of all power or above a purchasing utility's avoided cost of alternative equivalent power resources, violates existing precedent and provisions of the FPA. This renders the European option of feed-in tariffs legally incapable of American adaptation. Despite this, some U.S. states are ignoring these issues and moving toward promotional feed-in tariffs. Such actions by states (setting wholesale prices for power sales) are preempted under the Federal Power Act and the filed-rate doctrine as interpreted by the U.S. Supreme Court.

This leaves the RPS, as now adopted by more than half the states, as the legally viable alternative to monetarily incentivize the adoption of renewable power technologies for power generation by independent power producers in the United States. Renewable energy promotion has important implications for the control of carbon emissions from the power sector,⁴⁵⁷ therefore it is vital to reconcile national energy policy with constitutional requirements and send clear signals to states.

456. WISER & BARBOSE, *supra* note 106, at 29. Only in Massachusetts and Connecticut, with the highest RECs trading costs, has the impact on rates of RPS exceeded 1%. *Id.*

457. *See generally* Ferrey, *supra* note 18.