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Power Forward: The Argument for a National RPS

LINCOLN L. DAVIES

The debate over a national renewable energy requirement has lost its way. Perhaps one of the most important legislative proposals in recent memory because it could transform the United States' energy infrastructure, this "renewable portfolio standard" or "RPS" would likely compel electric utilities to obtain one-fifth of their power from renewable resources. Yet the discourse over this proposal has veered from the core question it raises. With thirty-six state RPSs already in place, the key issue is not whether there should be an RPS at all but whether a state or federal regime will best accomplish the RPS's objectives. This Article concludes that the evidence overwhelmingly points to the need for a national law. The Article reaches its conclusion using three tools: a multi-state survey of state RPSs; a newly developed metric of state RPS design, their "efficacy tendency"; and extant data on RPS performance. Finally, the Article suggests that another overlooked rationale argues for a federal law: a national RPS can help energy law and environmental law merge.

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The Argument for a National RPS

LINCOLN L. DAVIES*

I. INTRODUCTION

For more than a decade, debate over a national renewable energy requirement has been mired in congressional deadlock. More than twenty-five proposals for this so-called federal "renewable portfolio standard" ("RPS") have been introduced on Capitol Hill, but not one has passed both chambers. Words have been harsh. Opponents of the measure have called it everything from "a new energy tax"[1] to "a huge wealth transfer,"[2] from "an unneeded subsidy"[3] to "a major policy blunder."[4] Proponents, by contrast, have been effusive on multiple fronts. In the RPS, they see the United States' energy future, a law that will "create jobs, save consumers money,"[5] reduce pollution, "reduce the cost of capital,"[6] and "increase our energy security and enhance the reliability of the electricity grid."[7] Both sides' positions thus staked, the result has been predictable: an "ossified" stalemate, a "long congressional deep freeze."[8]

The federal debate is the result of massive state action. Since 1983, more than two-thirds of the country—thirty-six states[9]—have adopted their

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* Associate Professor of Law, S.J. Quinney College of Law, University of Utah. This Article benefited from the insightful comments of Teneille Brown, Phoenix Cai, Brigham Daniels, Jason Groenewold, Jim Rasband, Lisa Sun, Buzz Thompson, Chris Whytock, and Amy Wildermuth, and from most helpful dialogue at the Rocky Mountain Junior Scholars Forum, the J. Reuben Clark Law Society's Second Annual Faculty Section Conference, and the University of Utah S.J. Quinney College of Law's Faculty Scholarship Workshop. Steven Anderson, Jason Groenewold, and Adam Reiser provided excellent research assistance. I dedicate the Article to my grandfather, Sherman D. Davies, who is always an inspiration.

[1] 151 CONG. REC. S6688 (daily ed. June 16, 2005) (statement of Sen. Talent).

[2] *Id.* at S6682 (statement of Sen. Craig).

[3] *Id.* at S6677 (statement of Sen. Alexander).

[4] Robert J. Michaels, *A National Renewable Portfolio Standard: Politically Correct, Economically Suspect*, ELECTRICITY J., Apr. 2008, at 9, 10 [hereinafter Michaels, *Politically Correct*].

[5] 153 CONG. REC. E311 (daily ed. Feb. 9, 2007) (statement of Rep. Udall).

[6] *Renewable Electricity: Hearing Before the Comm. on Energy and Natural Resources*, 111th Cong. 9 (2009) (statement of Ralph Izzo, President, Chairman, and CEO, Public Service Enterprise Group, Inc.).

[7] 153 CONG. REC. S7597 (daily ed. June 13, 2007) (statement of Sen. Bingaman).

[8] X, *Forget a Federal RPS—Here's an Idea that Will Work*, ELECTRICITY J., Apr. 2009, at 6, 6.

[9] This Article's survey includes thirty-five states plus the District of Columbia. For ease of reference, however, this Article refers to those jurisdictions that have adopted RPSs as "thirty-six states," acknowledging of course that the District of Columbia lacks state status. Recently, Oklahoma also adopted an RPS, bringing the "state" total to thirty-seven. This enactment came too close to publication to include within the Article's survey.

own RPSs: laws that require electric utilities to obtain a certain percentage of the energy they sell from renewable resources. This burgeoning trend has led some to deem state RPSs the "epitom[e] . . . of state action in the absence of strong federal support for renewable energy."[10] Indeed, those opposed to a national RPS charge that state efforts represent a regulatory "race to the top" that federal action would stunt. Opponents also assert that a national law would unfairly disadvantage those states that are comparatively poor in renewable resources, and that the RPS should not be perpetuated as a regulatory tool at all because it is cumbersome and inefficient in its aims.[11] On the other side, those urging a national effort have relied on traditional arguments for federal law's elevation, including that state RPSs risk an unmanageable regulatory mélange, that national uniformity is needed to fix the state hodgepodge, and, most vociferously, that a federal RPS would offer a wealth of societal benefits.[12]

Remarkably, missing from this debate is a discussion of what a federal law would mean for achieving RPS objectives. Scholars increasingly point to energy deregulation as broken, its attempt to rely on markets a regulatory failure. The flagship examples are Enron and the California crisis,[13] but the critique cuts more broadly. Depending on whom you ask, electricity deregulation has "faced many challenges"[14] or yielded "mixed

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[10] Kevin L. Doran, *Can the U.S. Achieve a Sustainable Energy Economy from the Bottom-Up?: An Assessment of State Sustainable Energy Initiatives*, 7 VT. J. ENVTL. L. 95, 107 (2006).

[11] *See infra* Part IV; *cf.* BARRY G. RABE, PEW CTR. GLOBAL CLIMATE CHANGE, RACE TO THE TOP: THE EXPANDING ROLE OF U.S. STATE RENEWABLE PORTFOLIO STANDARDS 1–2 (2006), *available at* http://www.pewclimate.org/docUploads/RPSReportFinal.pdf (discussing future opportunities and challenges faced by state RPS programs).

[12] *See infra* Part IV.

[13] *See* FED. TRADE COMM'N, STAFF REPORT: COMPETITION AND CONSUMER PROTECTION PERSPECTIVES ON ELECTRIC POWER REGULATORY REFORM: FOCUS ON RETAIL COMPETITION, at i (2001) (examining a potential need for federal regulation of retail electricity competition); ERIC HIRST, THE CALIFORNIA ELECTRICITY CRISIS: LESSONS FOR OTHER STATES 1 (2001), *available at* http://www.eei.org/issues/comp_reg/CALessons_hirst.pdf (arguing that competitive markets are successful despite California's failure at restructuring); MIMI SWARTZ & SHERRON WATKINS, POWER FAILURE: THE INSIDE STORY OF THE COLLAPSE OF ENRON 15 (2003) (discussing the collapse of Enron); Severin Borenstein, *The Trouble with Electricity Markets: Understanding California's Restructuring Disaster*, J. ECON. PERSP., Winter 2002, at 191, 191–92 (discussing California's attempt at regulating electricity markets and the problems in regulating electricity markets in general); Timothy P. Duane, *Regulation's Rationale: Learning from the California Energy Crisis*, 19 YALE J. ON REG. 471, 473 (2002) (arguing that California's failure at restructuring electricity was caused by legislative and administrative failure in preventing opportunistic behavior); Paul L. Joskow, *California's Electricity Crisis*, 17 OXFORD REV. ECON. POL'Y 365, 374 (2001) (discussing the California energy crisis); Michael A. Yuffee, *California's Energy Crisis: How Best To Respond to the "Perfect Storm,"* 22 ENERGY L.J. 65, 65 (2001) (arguing that California's energy crisis was due to "illogical policies and poorly designed market structures"); Jacqueline Lang Weaver, *Can Energy Markets Be Trusted? The Effect of the Rise and Fall of Enron on Energy Markets*, 4 HOUS. BUS. & TAX L.J. 1, 5 (2004) (analyzing the fallout from the failure of Enron and the California energy crisis).

[14] Steven J. Eagle, *Securing a Reliable Electricity Grid: A New Era in Transmission Siting Regulation?*, 73 TENN. L. REV. 1, 4 (2005).

results."[15] It has been everything from a "fiasco"[16] to a "palpable failure"[17] to "on balance a success."[18] Despite these mixed reviews, commentators tend to agree that where deregulation has failed, it is because policy design matters. "Restructuring's major failures should be blamed not on opportunistic behavior by any party or group of parties, but rather on the failure . . . to develop precise policy goals and complete performance metrics . . . ."[19] When proposed legislation would rely on the same market-based tools that restructuring has used, one would expect the discourse to focus heavily on the legislation's policy aims and design. Yet this part of the RPS debate has not been staged. There has been virtual silence.

This Article aims to break the silence. It takes up a fundamental, yet largely unaddressed, question in the RPS debate. Will the RPS's core aim of promoting renewable energy be more likely accomplished if the law is federal rather than state-based? Or, have sideshows distracted the RPS debate from the measure's central pursuit? Are politics standing in the way of good policy?

Using a new empirical survey of existing state RPSs and available existing data on state RPS performance, this Article seeks to answer these questions. It offers four contributions:

> 1. Evidence of both state RPS design and performance strongly favors a national standard. This Article's state law survey shows that the risk of patchwork regulation is real. Reliance on state RPSs frustrates these laws' very purpose: incentivizing deployment of renewable technologies. It does this by creating different market definitions for renewable energy and, with even greater variance, for renewable energy credits ("RECs") that can be used to comply with the laws.
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> 2. The survey also reveals that state RPSs erect geographically-based barriers to trade at an alarming rate. More than three-quarters of states impose geographic restrictions of one kind or another. Although commentators previously have pointed to the constitutional dilemmas of

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[15] John E. Kwoka, Jr., *Twenty-Five Years of Deregulation: Lessons for Electric Power*, 33 LOY. U. CHI. L.J. 885, 886 (2002).

[16] Todd J. Zywicki, *Is Forum Shopping Corrupting America's Bankruptcy Courts?*, 94 GEO. L.J. 1141, 1158–59 n.89 (2006) (reviewing LYNN M. LOPUCKI, COURTING FAILURE: HOW COMPETITION FOR BIG CASES IS CORRUPTING THE BANKRUPTCY COURTS (2005)).

[17] Robert Kuttner, Keynote Address at the University of North Carolina Center on Poverty, Work, and Opportunity and the American Constitution Society for Law and Society: Wealth Inequality and the Eroding Middle Class (Nov. 4–5, 2007), *in* 15 GEO. J. ON POVERTY L. & POL'Y 417, 421 (2008).

[18] Richard D. Cudahy & William D. Henderson, *From Insull to Enron: Corporate Re(regulation) After the Rise and Fall of Two Energy Icons*, 26 ENERGY L.J. 35, 108 (2005).

[19] Seth Blumsack, *Measuring the Benefits and Costs of Regional Electric Grid Integration*, 28 ENERGY L.J. 147, 148 (2007).

such limits, just as problematic is that geographic barriers undermine RPS aims. Geographic restrictions to trade preclude development of a uniform market for renewable electric generation technologies, the very market that RPSs seek to promote.

3. State RPS policy design confirms that a federal approach is most appropriate. Early feedback suggests that different state RPSs have varied widely in their success; this may well be attributed to divergent policy designs. This Article develops a new four-pronged metric for assessing RPS policies, termed the laws' "efficacy tendency."[20] Applying this metric reveals that state RPS designs differ significantly not only among each other, but also within possible policy traits as well. This only underscores the conclusion that a federal RPS, if well designed, has much to add to the current state of affairs.

4. Another justification for the RPS also supports a national approach. The RPS accomplishes what few proposals do—it merges energy and environmental objectives. Historically, these two fields have been at odds. Energy law has focused on economics: a reliable energy supply at a reasonable price. Environmental law has centered on health and risk: protection from pollutants and moderation of resource consumption. A federal RPS, however, offers an opportunity for achieving both objectives. In the electric generation sector at least, a national RPS would ensure a diversified energy supply that is reliable, cost-efficient, and environmentally friendly. The RPS debate thus far has largely ignored the benefits of such a legal merger.

The Article proceeds in five substantive parts. Part II begins by tracing the history of electricity regulation. Part III reviews the RPS, its policy objectives, and implementation. Part IV appraises the federal-state RPS debate, outlining the arguments for and against the RPS's federalization. Part V then weighs the direct evidence on the federal-state question, employing this Article's survey of state RPSs and the newly developed "efficacy tendency" metric of RPS design. Part VI concludes by briefly assessing whether the RPS's combination of energy and environmental objectives independently advocates for a state or national regime.

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[20] *See infra* Part V.D.

II. THE CURRENT LANDSCAPE: ELECTRICITY REGULATION

The field of energy law is vast, even when placed next to environmental law's breathtaking regulatory scope.[21] Put the two together, and it becomes immediately apparent that the RPS barely scratches the surface. From an energy perspective alone, this is obvious. Energy falls into two categories. There are "primary" energy sources—the fuels at the heart of resource extraction: crude oil, coal, natural gas, nuclear sources, and renewables. And there are "secondary" and "tertiary" energies—the refined and processed fuels at the core of how society runs: gasoline, synthetic gas, and electricity.[22]

An RPS tackles only one of these energy forms, and it touches only one aspect of it. The RPS's subject is electric generation, specifically, one portion of electric utilities' generation mix. But even taking electric generation alone, the RPS leaves much more untouched. It does not deal with the transport of electricity ("transmission"), even for the renewables it seeks to promote.[23] It does not address ultimate delivery ("distribution") or day-to-day system operations ("reliability"), even though the use of many renewables, particularly wind and solar, heavily impacts that question.[24] And it does not change price ("ratemaking") or cost recovery ("prudency") determinations, even though investor assurance is very much what RPSs are about.

The RPS, then, is limited in its own sphere, and is further limited when one considers everything else that energy regulation controls. Thus, while a national RPS ultimately may raise questions about what shape energy law should take,[25] most critical to understanding the RPS is not the myriad other aspects of energy law,[26] but electricity regulation itself.

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[21] *See, e.g.*, RICHARD J. LAZARUS, THE MAKING OF ENVIRONMENTAL LAW 5–6 (2004); JAMES SALZMAN & BARTON H. THOMPSON, JR., ENVIRONMENTAL LAW AND POLICY 1–2 (2d ed. 2007); *see also* Zygmunt J.B. Plater, *From the Beginning, A Fundamental Shift of Paradigms: A Theory and Short History of Environmental Law*, 27 LOY. L.A. L. REV. 981, 1003–04 (1994) (examining environmental law's "amazing subject matter diversity"); Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21, 22–23 (2001) (arguing that the United States is currently "stuck in the same basic regulatory system that was established in the 1970s, when all of the major federal regulatory statutes that we currently have were enacted"); A. Dan Tarlock, *The Future of Environmental "Rule of Law" Litigation*, 17 PACE ENVTL. L. REV. 237, 238–39, 248–50 (2000) (describing the numerous problems environmental law policy seeks to address).

[22] *See* ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, ANNUAL ENERGY REVIEW 402 (2008), *available at* http://www.eia.doe.gov/emeu/aer/pdf/aer.pdf [hereinafter EIA, ANNUAL ENERGY REVIEW].

[23] *See* Joshua P. Fershee, *Changing Resources, Changing Market: The Impact of a National Renewable Portfolio Standard on the U.S. Energy Industry*, 29 ENERGY L.J. 49, 68 (2008).

[24] *See, e.g.*, Warren C. Kotzmann, *Flipping the Switch on Alternative Energy?*, 29 J. LAND RESOURCES & ENVTL. L. 19, 22–23 (2009).

[25] *See infra* Part VI.

[26] *See* FRED BOSSELMAN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT: CASES AND MATERIALS 24, 78, 209, 407, 801, 1179, 1243–44 (2d ed. 2006); JAMES E. HICKEY, JR. ET AL., ENERGY LAW AND POLICY FOR THE 21ST CENTURY §§ 2-1, 4-1, 5-1, 7-1, 8-1, 9-1, 10-1, 11-1, 12-1 (2000).

Electricity regulation today is the result of two countervailing historical forces: initially, government intervention to mediate imperfect competition's effects, and then, a pendulum-like effort to free industry from regulatory restraint. This cycle of regulation-to-deregulation is not unique to energy law,[27] but it defines the field. The clear arc of electricity regulation over the past decades reflects a transformation from a highly regulated industry where prices and supplies were subject to direct governmental review, to a still-regulated industry in which the market structure that determines prices and supplies is the subject of governmental oversight. In this sense, energy law's path is not one of deregulation per se, but of restructuring.[28] No matter its changes, however, energy law's central objective remains the same: to provide an abundant, stable energy supply at a low price.[29]

A. *Origins and Objectives*

To place electricity regulation's origins, nearly ancient history must be traced. Contemporary electricity law has its foundation in the so-called "regulatory compact," a convention dating to common law regulation of industries that, today, most observers scarcely would consider energy-related.[30] The purpose of this implicit bargain—what then-Judge Kenneth Starr called a fictional government-business "compact of sorts"—is clear.[31] The private company takes on the mantle of the "public utility," receives a legally protected monopoly to serve a specified geographic area and, in exchange, assumes the obligation to reliably deliver that service under "intensive regulation, including price regulation, quite alien to the free market."[32] The common law thus built the regulatory compact around six

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[27] *See* Duane, *supra* note 13, at 489–90 ("The apparent success of deregulation in other industries (such as airlines, telecommunications, natural gas, trucking) clearly served as a model for deregulation advocates in the electricity sector."); Richard J. Pierce, Jr., *Completing the Process of Restructuring the Electricity Market*, 40 WAKE FOREST L. REV. 451, 463–64 (2005) (acknowledging the same trends among differing industries); Joseph P. Tomain, *Electricity Restructuring: A Case Study in Government Regulation*, 33 TULSA L.J. 827, 829 (1998) (describing the cycle of laissez-faire competition to regulation to deregulation).

[28] Jim Rossi, *Redeeming Judicial Review: The Hard Look Doctrine and Federal Regulatory Efforts To Restructure the Electric Utility Industry*, 1994 WIS. L. REV. 763, 781 n.70.

[29] Joseph P. Tomain, *The Dominant Model of United States Energy Policy*, 61 U. COLO. L. REV. 355, 375–76 (1990).

[30] *See* BOSSELMAN ET AL., *supra* note 26, at 24 ("Regulation of ferries, sewers, mills, bridges, and railroads provide the historical origins for modern public utility regulation."); Jim Rossi, *Universal Service in Competitive Retail Electric Power Markets: Whither the Duty To Serve?*, 21 ENERGY L.J. 27, 29 (2000) (describing how current regulation is derived from "ancient" common law).

[31] Jersey Cent. Power & Light Co. v. Fed. Energy Regulatory Comm'n, 810 F.2d 1168, 1189 (D.C. Cir. 1987) (Starr, J., concurring).

[32] *Id.*; *see also* Office of Pub. Util. Counsel v. Pub. Util. Comm'n, 104 S.W.3d 225, 227–28 (Tex. App. 2003) ("Under a fully regulated system, an electricity utility enters into a 'regulatory compact' with the public: in return for a monopoly over electricity service in a given area; the utility agrees to provide service to all requesting customers and to charge only the retail rates set by the [Public Utility] Commission.").

pillars, namely, the utility's (1) exclusive provision of (2) a public good (3) at a reasonable price (4) in a fixed territory, (5) under an obligation to serve all members of the public in that area, but (6) subject to revision of the compact's terms as technology evolved.[33]

Different commentators offer different rationales for this governmental intrusion,[34] but the generally accepted justification today is the neoclassical economic assertion that regulation is necessary to correct market imperfections.[35] Electric utilities traditionally have been seen as "natural monopolies": The first market entrant takes a preference position because the cost of building a new system on top of the old one would be redundant.[36] The "key idea" of the natural monopoly is that limiting a market to a single provider can "realize economies of scale."[37] "It is relatively inexpensive, for example, to add another electricity end user to a system once generation, transmission, and distribution are constructed."[38] The very notion of the regulatory compact, then, hinges on a theory of economic efficiency, to wit, an attempt to ensure less expensive service for the public from one utility rather than having multiple companies battle to a price through competition. Because the regulatory compact cements a firm's position as a monopoly, however, it raises the concern that the utility will charge supra-competitive rates—that it will unilaterally increase prices (and its own profits) because it faces no competition.[39] For this reason, the flipside of the regulatory compact's guarantee of exclusivity is the utility's obligation of "reasonable" rates.[40]

From the perspective of electricity, the net result of the regulatory compact was the nationwide emergence of "vertically integrated" utilities,

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[33] BOSSELMAN ET AL., *supra* note 26, at 46.

[34] *See, e.g.*, George Priest, *The Origins of Utility Regulation and the "Theories of Regulation" Debate*, 36 J.L. & ECON. 289, 303 (1993).

[35] BOSSELMAN ET AL., *supra* note 26, at 51. *But see* Richard A. Posner, *Natural Monopoly and Its Regulation*, 21 STAN. L. REV. 548, 548–49 (1969) (challenging the natural monopoly rationales for regulation); Joseph P. Tomain, *The Past and Future of Electricity Regulation*, 32 ENVTL. L. 435, 447–48 (2002) (summarizing critiques of the natural monopoly as a regulatory justification).

[36] *See* Shubha Ghosh, *Decoding and Recoding Natural Monopoly, Deregulation, and Intellectual Property*, 2008 U. ILL. L. REV. 1125, 1138–39.

> A natural monopoly arises when the average costs of producing a product or service declines as more of the product or service is supplied to the market. Because of declining average costs, it is more efficient from the perspective of lowering the average cost of production to have one firm serve the market rather than duplicate expenditures. Average costs are falling either because there are huge fixed costs to production or because the costs of producing an additional unit of the product or service is negligible.

Id.; *accord* SANFORD V. BERG & JOHN TSCHIRHART, NATURAL MONOPOLY REGULATION: PRINCIPLES AND PRACTICE 22–24 (1988); DANIEL F. SPULBER, REGULATION AND MARKETS 513–14 (1989).

[37] Joseph P. Tomain, *The Persistence of Natural Monopoly*, 16 NAT. RESOURCES & ENV'T 242, 242 (2002) [hereinafter Tomain, *Natural Monopoly*].

[38] *Id*.

[39] *See* STEPHEN BREYER, REGULATION AND ITS REFORM 15–16 (1982).

[40] *See* Rossi, *Universal Service*, *supra* note 30, at 34–35; Tomain, *Natural Monopoly*, *supra* note 37, at 242; *see also* BOSSELMAN ET AL., *supra* note 26, at 57–58.

"one-stop-shopping" companies that generated their own power, moved that power vast distances over bulk transmission systems they built and owned, and then ultimately delivered the power to retail customers using the companies' own local distribution lines. For decades, these companies dominated the industry under the rosy perception that the public was being served, the compact worked, and all was well.[41] This began to unravel, however, when in the 1960s, 1970s, and 1980s, electricity prices precipitously climbed, and the massive capital investments that utilities had been sinking into their systems came under heightened political scrutiny.[42] Close behind was legislative willingness to tinker with the status quo,[43] followed by a bevy of studies urging industry transformation.[44]

Through all of this, the singular objective of the regulatory compact remained constant—reliable service at reasonable rates—but the regulatory mechanisms used to get there did not. They changed, dramatically.

B. *Mechanisms*

Over time, the mechanism invoked to carry out electricity regulation's task became almost as entrenched as the regulatory compact itself. Enacted in 1887, the Interstate Commerce Act ("ICA")[45] set the framework for the governance of virtually all utilities and common carriers. It created an administrative agency charged with closely monitoring the industry and ensuring that it "provided services in standardized packages at standardized prices to all similarly situated end-users."[46] What soon followed were industry-specific statutes spreading the ICA's approach across society.[47] Most notably for the electric sector, Congress in 1920

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[41] *See* Jim Chen, *The Death of the Regulatory Compact: Adjusting Prices and Expectations in the Law of Regulated Industries*, 67 OHIO ST. L.J. 1265, 1337 (2006) (arguing that the vertically integrated electric utility "may have reflected the most efficient arrangements available to the United States" in the twentieth century); Rossi, *Universal Service*, *supra* note 30, at 32 (noting efficiencies of vertical integration).

[42] Tomain, *Past and Future*, *supra* note 35, at 450–51.

[43] *Id*. at 451–54; *accord* Pierce, *supra* note 27, at 453–55.

[44] *See generally* STEPHEN G. BREYER & PAUL W. MACAVOY, ENERGY REGULATION BY THE FEDERAL POWER COMMISSION (1974); PAUL L. JOSKOW & RICHARD SCHMALENSEE, MARKETS FOR POWER: AN ANALYSIS OF ELECTRIC UTILITY DEREGULATION (1983); Richard J. Pierce, Jr., *A Proposal to Deregulate the Market for Bulk Power*, 72 VA. L. REV. 1183 (1986); Richard J. Pierce, Jr., *Reconsidering the Roles of Regulation and Competition in the Natural Gas Industry*, 97 HARV. L. REV. 345 (1983).

[45] 24 Stat. 379 (1887). The ICA established the now-defunct Interstate Commerce Commission ("ICC"), which regulated, among other things, railroads. The ICC's functions now reside with the Surface Transportation Board. ICC Termination Act of 1995, Pub. L. No. 104-88, 109 Stat. 803 (1995); *see also* Overview of Surface Transportation Board, http://www.stb.dot.gov/stb/about/overview.html (last visited June 17, 2010).

[46] Joseph D. Kearney & Thomas W. Merrill, *The Great Transformation of Regulated Industries Law*, 98 COLUM. L. REV. 1323, 1325 (1998).

[47] *See, e.g.*, Nw. Pub. Serv. Co. v. Montana-Dakota Utils. Co., 181 F.2d 19, 22 (8th Cir. 1950) ("The plan or scheme of the Federal Power Act is analogous to that of the Interstate Commerce Act, 49

created the Federal Power Commission ("FPC"), now succeeded by the Federal Energy Regulatory Commission ("FERC"),[48] and passed a key statute it administers, the Federal Power Act ("FPA").[49]

The FPA implemented the regulatory compact through a dual mandate. First, it created a command-and-control regime with wholesale electricity and transmission prices subject to FERC oversight. FERC thus became obligated to use its expertise to ensure that rates strike a balance between investors and consumers. Rates charged under the FPA must be "just and reasonable"[50]—a regulatory term-of-art for prices that (1) assure a fair return on stockholder investment and the continuing attraction of capital but (2) do not overcharge consumers.[51] Such rates also must be nondiscriminatory; the FPA prohibits FERC-jurisdictional utilities from giving "any undue preference or advantage" to customers.[52] In addition, rates subject to the FPA cannot be collected until they have been submitted for FERC review—and then only those rates and no others can be charged.[53]

Second, the FPA charged FERC with overseeing proposed utility mergers, as well as sales, leases, and transfers of certain utility-owned assets.[54] The primary purpose of this authority was to ensure that utilities do not use mergers and acquisitions as a backdoor to unfairly increase profits by cross-subsidizing their non-utility affiliates.[55] Combined with the Public Utility Holding Company Act of 1935 ("PUHCA"),[56] which sought to reverse the growing "wave of consolidation[]" of utilities into non-energy-related holding companies across the nation,[57] FERC gained

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U.S.C.A. § 1 et seq., and decisions under the latter Act should be controlling here."), *aff'd*, 341 U.S. 246, 255 (1951).

[48] For convenience, this Article uses "FERC" to refer both to the FPC and FERC itself.

[49] 16 U.S.C. §§ 791a–823d (2006). The 1920 enactment governed hydroelectric power. In 1935, amendments to the FPA expanded FERC's authority over electric transmission and wholesale power sales. *Id*. §§ 824–824w. In 1938, Congress passed the FPA's counterpart for the natural gas industry, the Natural Gas Act ("NGA"). 15 U.S.C. §§ 717–717z (2006). For a pithily insightful history of the FPA, see Richard D. Cudahy, *70th Anniversary Celebration of the Federal Power Act*, 26 ENERGY L.J. 389 (2005). For a broader evaluation, see DAVID HOWARD DAVIS, ENERGY POLITICS (4th ed. 1993).

[50] 16 U.S.C. § 824d(a).

[51] *See* Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 603–06 (1944) (holding that a rate set by the FPC that enabled a gas company to operate successfully, maintain its financial integrity, attract capital, and compensate its investors was valid); Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n, 262 U.S. 679, 689–92 (1923) (holding that a rate set by the PSC was unjust and unreasonable because it failed to accord proper weight to the enhanced costs of construction).

[52] 16 U.S.C. § 824d(b). If FERC believes that previously approved rates have become "unjust and unreasonable" or discriminatory, it has the power to investigate and correct the situation. *Id.* § 824e(a).

[53] *Id*. § 824d(c)–(e). This is the ironclad rule of utility law known as the "filed rate doctrine." *See, e.g.*, Ark. La. Gas Co. v. Hall, 453 U.S. 571, 577 (1981).

[54] 16 U.S.C. § 824b(a).

[55] *Id*. § 824b(a)(4).

[56] 15 U.S.C. §§ 79–79z-6 (2006).

[57] Michael C. Blumm, *The Northwest's Hydroelectric Heritage: Prologue to the Pacific Northwest Electric Power Planning and Conservation Act*, 58 WASH. L. REV. 175, 190–91 (1983); *see*

immense control not only over electricity rates, but also over the very structure of the industry.[58]

Initially, and long thereafter, FERC carried out its FPA duties using "cost-of-service" ratemaking. The agency tied utility rates to the investments they actually made in their systems, and then sought, administratively, to replicate price levels that would give utilities the kind of return on their investment they would have made if the market were competitive.[59] However, concerns that traditional cost-of-service ratemaking was inherently flawed,[60] coupled with the arrival of non-utility, or "independent," power producers,[61] ultimately led FERC to allow utilities to begin charging "market-based" rates.[62] In this emerging regime, the new theory was that if FERC policed markets to ensure that they were functionally competitive, the FPA's "just and reasonable" requirement would be fulfilled. That is, actually competitive rates would be more accurate, and more efficient, than cost-of-service ratemaking's crude and cumbersome effort at merely approximating competition.[63]

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also Nidhi Thakar, Note, *The Urge To Merge: A Look at the Repeal of the Public Utility Holding Company Act of 1935*, 12 LEWIS & CLARK L. REV. 903, 913 (2008) ("In 1926 alone, there were more than 1000 mergers, most of which involved sales of public utilities to private companies . . . controlled by large holding companies.").

[58] FERC jointly administered PUHCA with the Securities and Exchange Commission. The Energy Policy Act of 2005 largely repealed PUHCA. *See* 42 U.S.C. §§ 16451–16463 (2006); *see also* Repeal of the Public Utility Holding Company Act of 1935 and Enactment of the Public Utility Holding Company Act of 2005, 70 Fed. Reg. 75,592, 75,592–93 (Dec. 20, 2005) (to be codified at 18 C.F.R. pts. 365 & 366); Markian M.W. Melnyk & William S. Lamb, *PUHCA's Gone: What Is Next for Holding Companies?*, 27 ENERGY L.J. 1, 2–3, 24 (2006) (examining the conditions that gave rise to PUHCA and the changes that resulted in its repeal); *infra* Part II.C (examining FERC's role in regulating the industry).

[59] BOSSELMAN ET AL., *supra* note 26, at 78–79. The details of cost-of-service ratemaking are extraordinarily complex. *See* JAMES C. BONBRIGHT ET AL., PRINCIPLES OF PUBLIC UTILITY RATES 109, 112–20 (2d ed. 1988); CHARLES F. PHILLIPS, JR., THE REGULATION OF PUBLIC UTILITIES: THEORY AND PRACTICE 435–36 (3d ed. 1993).

[60] *See, e.g.*, Stephen Breyer, *Analyzing Regulatory Failure: Mismatches, Less Restrictive Alternatives, and Reform*, 92 HARV. L. REV. 547, 551, 609 (1979) (examining the problems with various modes of classical regulation). Cost-of-service ratemaking is time-consuming and expensive, and agency economists face immense informational asymmetries.

[61] *See* Richard D. Cudahy, *PURPA: The Intersection of Competition and Regulatory Policy*, 16 ENERGY L.J. 419, 425 (1995); Tomain, *Natural Monopoly*, *supra* note 37, at 451–53.

[62] *See* Entergy Servs., Inc., 58 F.E.R.C. ¶ 61,234, at p. 61,760 (1992); Dartmouth Power Assocs. Ltd. P'ship, 53 F.E.R.C. ¶ 61,117, at pp. 61,358–59 (1990); Doswell Ltd. P'ship, 50 F.E.R.C. ¶ 61,251, at pp. 61,757–58 (1990).

[63] *See* Morgan Stanley Capital Group Inc. v. Pub. Util. Dist. No. 1 of Snohomish County, 128 S. Ct. 2733, 2747–48 (2008) (holding that FERC can only declare a mutually agreed-upon contract for electricity as unjust and unreasonable when the public consumer is seriously harmed); La. Energy & Power Auth. v. Fed. Energy Regulatory Comm'n, 141 F.3d 364, 365 (D.C. Cir. 1998) (holding that FERC may rely on market-based rates in a competitive market to satisfy the "just and reasonable" requirement); Elizabethtown Gas Co. v. Fed. Energy Regulatory Comm'n, 10 F.3d 866, 870 (D.C. Cir. 1993) (holding that FERC's approval of market-based rates does not violate its obligation to ensure just and reasonable rates). There are, however, opponents to market-based rates. *See, e.g.*, Jeffrey McIntyre Gray, *Reconciling Market-Based Rates with the Just and Reasonable Standard*, 26 ENERGY L.J. 423, 429–31 (2005) (explaining that FERC cannot ensure just and reasonable rates if it cannot assure that a competitive market exists); Gerald Norlander, *May the FERC Rely on Markets To Set*

Market-based rates were the opening shot in the electric power regulatory revolution. The old school of thought that electric utilities were natural monopolies by definition gave way to a new vision that the monopoly could be disaggregated into "its three component parts: generation, transmission, and distribution."[64] Under this vision, traditional utilities could compete with other companies for power sales, while the only true "bottleneck" facilities with actual natural monopoly attributes—the transmission and distribution systems—could be opened for all comers.[65] And thus, the "great transformation" of the industry began.[66]

Rather than dictating prices directly, FERC invoked novel instruments to regulate the markets, and then let the markets set the price. FERC created a standardized, though complex,[67] test for assessing where and when generation owners could unduly influence electric prices—and, by extension, where they would and would not be allowed to charge market-based rates.[68] It institutionalized a similar screen for reviewing mergers, seeking to prevent deals that could dampen, rather than promote, competition.[69] It compelled utilities that owned transmission lines to offer service over those facilities on a first-come, first-serve basis to any

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Electric Rates?, 24 ENERGY L.J. 65, 66, 88 (2003) (concluding that FERC does not have the authority under existing law to use market-based rates to set the standard).

[64] ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, THE CHANGING STRUCTURE OF THE ELECTRIC POWER INDUSTRY: AN UPDATE, at ix, 1 (1996), *available at* http://tonto.eia.doe.gov/FTPROOT/electricity/056296.pdf; ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, THE RESTRUCTURING OF THE ELECTRIC POWER INDUSTRY: A CAPSULE OF ISSUES AND EVENTS 1 (2000), *available at* http://tonto.eia.doe.gov/FTPROOT/other/booklet.pdf.

[65] *See* Joel B. Eisen, *Regulatory Linearity, Commerce Clause Brinksmanship, and Retrenchment in Electric Utility Deregulation*, 40 WAKE FOREST L. REV. 545, 549–50 (2005); Roger Ridlehoover, *The Role of Entry in Deregulating Gas and Electricity*, 19 ENERGY L.J. 307, 310–13 (1998).

[66] Kearney & Merrill, *supra* note 46, at 1324. For an in-depth look at electric restructuring, see generally RICHARD F. HIRSH, POWER LOSS: THE ORIGINS OF DEREGULATION AND RESTRUCTURING IN THE AMERICAN ELECTRIC UTILITY SYSTEM 2–3 (1999).

[67] Some would also say flawed. *See, e.g.*, Matthew W.S. Estes, *Measuring Market Power with FERC's Appendix A Analysis*, 19 NAT. RESOURCES & ENV'T 20, 21–24 (2005).

[68] Market-Based Rates for Wholesale Sales of Electric Energy, Capacity and Ancillary Services by Public Utilities, Order No. 697, 72 Fed. Reg. 39,904 (July 21, 2007), F.E.R.C. Stats. & Regs. ¶ 31,252, *order on clarification*, 121 F.E.R.C. ¶ 61,260 (2007), *order on reh'g*, Order No. 697-A, 73 Fed. Reg. 25,832 (May 7, 2008), F.E.R.C. Stats. & Regs. ¶ 31,268, *order on reh'g*, 123 F.E.R.C. ¶ 61,055 (2008), *order on reh'g*, 124 F.E.R.C. ¶ 61,055 (2008), *order on reh'g*, Order No. 697-B, 73 Fed. Reg. 79,610 (Dec. 30, 2008), F.E.R.C. Stats. & Regs. ¶ 31,285, *order on reh'g*, Order No. 697-C, 127 F.E.R.C. ¶ 61,284 (2009), *order on reh'g*, Order No. 697-D, 130 F.E.R.C. ¶ 61,206 (2010), *order on clarification*, 131 F.E.R.C. ¶ 61,021 (2010).

[69] *See* Inquiry Concerning the Commission's Merger Policy Under the Federal Power Act: Policy Statement, Order No. 592, 61 Fed. Reg. 68,595 (Dec. 30, 1996), F.E.R.C. Stats. & Regs. ¶ 31,044 (1996), *order on reconsideration*, Order No. 592A, 62 Fed. Reg. 33,341 (June 19, 1997), 79 F.E.R.C. ¶ 61,321 (1997) (Merger Policy Statement); *see also* FPA Section 203 Supplemental Policy Statement, 72 Fed. Reg. 42,277 (Aug. 2, 2007), F.E.R.C. Stats. & Regs. ¶ 31,253 (2007), *order on clarification*, 122 F.E.R.C. ¶ 61,157 (2008); Revised Filing Requirements Under Part 33 of the Commission's Regulations, Order No. 642, 65 Fed. Reg. 70,983 (Nov. 28, 2000), FERC Stats. & Regs., Regulations Preambles July 1996-Dec. 2000 ¶ 31,111 (2000), *order on reh'g*, Order No. 642-A, 66 Fed. Reg. 16,121 (Mar. 23, 2001), 94 F.E.R.C. ¶ 61,289 (2001).

customer that wanted access.[70] It sought to ease market entry by clarifying rules for new generators to interconnect to the power grid.[71] And perhaps most revolutionarily—and certainly most controversially—it began promoting the coordination of utility operations and power sales through the formation of "regional transmission organizations," or "RTOs": independent companies that take over system operations for multiple utilities in an area, seek to centrally coordinate those operations more efficiently, and thus, make way for larger, more transparent, liquid, and economic power markets.[72]

When this flurry of policy activism subsided, a different industry, operating under a revamped regulatory regime, emerged. Utilities across the country had sold off their generation assets.[73] A bevy of new, largely natural gas-fired generators had come online.[74] Seven RTOs were in operation, and, although not nationwide, could be found from Maine to California.[75] Market-based, rather than cost-of-service, power contracts

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[70] Promoting Wholesale Competition Through Open Access Nondiscriminatory Transmission Services by Public Utilities, Order No. 888, 61 Fed. Reg. 21,540 (May 10, 1996), F.E.R.C. Stats. & Regs. ¶ 31,036 (1996), *order on reh'g*, Order No. 888-A, F.E.R.C. Stats. & Regs. ¶ 31,048 (1997), *order on reh'g*, Order No. 888-B, 62 Fed. Reg. 64,688 (Dec. 9, 1997), 81 F.E.R.C. ¶ 61,248 (1997), *order on reh'g*, Order No. 888-C, 82 F.E.R.C. ¶ 61,046 (1998), *aff'd in part sub nom.*, Transmission Access Policy Study Group v. Fed. Energy Regulatory Comm'n, 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom.*, New York v. Fed. Energy Regulatory Comm'n, 535 U.S. 1 (2002).

[71] Standardization of Generator Interconnection Agreements and Procedures, Order No. 2003, 104 F.E.R.C. ¶ 61,103 (2003), *order on reh'g*, Order No. 2003-A, 106 F.E.R.C. ¶ 61,220 (2004), *order on reh'g*, Order No. 2003-B, 109 F.E.R.C. ¶ 61,287 (2004), *order on reh'g*, Order No. 2003-C, 111 F.E.R.C. ¶ 61,401 (2005); Standardization of Small Generator Interconnection Agreements and Procedures, Order No. 2006, 70 Fed. Reg. 34,190 (June 13, 2005), FERC Stats. & Regs. ¶ 31,180 (2005), *order on reh'g*, Order 2006-A, 113 F.E.R.C. ¶ 61,195 (2005), *order on clarification*, Order 2006-B, 116 F.E.R.C. ¶ 61,046 (2006).

[72] *See* Regional Transmission Organizations, Order No. 2000, 65 Fed. Reg. 810 (Jan. 6, 2000), 89 F.E.R.C. ¶ 61,285, *order on reh'g*, Order No. 2000-A, 65 Fed. Reg. 12,088 (Mar. 8, 2000), *aff'd sub nom.*, Pub. Util. Dist. No. 1 v. Fed. Energy Regulatory Comm'n, 272 F.3d 607 (D.C. Cir. 2001); Remedying Undue Discrimination Through Open Access Transmission Service and Standard Electricity Market Design, 67 Fed. Reg. 63,327 (Oct. 11, 2002); *see also* Eisen, *supra* note 65, at 552–55; John S. Moot, *Economic Theories of Regulation and Electricity Restructuring*, 25 ENERGY L.J. 273, 310 (2004). More recently, FERC has adopted rules governing power markets within RTOs and ISOs. *See* Wholesale Competition in Regions with Organized Electric Markets, Order No. 719, 73 Fed. Reg. 64,100, 125 F.E.R.C. ¶ 61,071 (Oct. 17, 2008), *order on reh'g*, Order No. 719-A, 74 Fed. Reg. 37,776, 128 FERC ¶ 61,059 (July 16, 2009), *order on reh'g*, Order No. 719-B, 129 FERC ¶ 61,252 (2009).

[73] James B. Bushnell & Catherine Wolfram, *Ownership Change, Incentives and Plant Efficiency: The Divestiture of U.S. Electric Generation Plants* 5 (Ctr. for the Study of Energy Mkts., Working Paper No. CSEM WP 140, 2005), *available at* http://www.ucei.berkeley.edu/PDF/csemwp140.pdf.

[74] *See* EIA, ANNUAL ENERGY REVIEW, *supra* note 22, at 264; *see also* Tobey Winters, *The Rising Cost of Electricity Generation*, ELECTRICITY J., June 2008, at 57, 58 (explaining that natural gas combined-cycle generators increased during the 1990s).

[75] Federal Energy Regulatory Commission, RTO/ISO Map (Printable Version), http://www.ferc.gov/industries/electric/indus-act/rto/rto-map.asp (last visited June 17, 2010).

were now the default, not the other way around.[76] And competition was king.

Well, mostly.

C. *Power Forward?: Environmental Electricity*

FERC was not in the restructuring business by itself. The FPA generally limits FERC's jurisdiction to two key areas: (1) the "transmission of electric energy in interstate commerce"; and (2) the "sale of electric energy at wholesale in interstate commerce."[77] Explicitly reserved to state regulation are local electricity distribution and retail sales.[78] In short, although FERC has much regulatory power, states do too. Most utilities are subject to both. As a result, when historically vertically-integrated utilities began divesting their generation fleets, it was at their states' behest.[79] Likewise, when the revolution of competition-centered restructuring took its final step into retail markets, that too was because states called for it.[80] FERC may have laid the groundwork for competition to permeate the electric industry, but it could not finish the job alone.

The problem for full and complete competition, however, was that the job never was finished. Retail competition, in most states, stalled. The reasons were manifold. Restructuring did not deliver the lower prices it promised, or new industry entrants did not appear, or the rules were fundamentally flawed, or consumers did not care, but either way the result was the same.[81] The move to retail electric competition quickly became moribund.[82] Thus, although competition clearly transformed the electric

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[76] *See* Bernard S. Black & Richard J. Pierce, Jr., *The Choice Between Markets and Central Planning in Regulating the U.S. Electricity Industry*, 93 COLUM. L. REV. 1339, 1349 (1993) (discussing changes that allowed plants to sell wholesale power at market prices).

[77] 16 U.S.C. § 824(b)(1) (2006). This historical bright line was modified to a degree in 1992, when FERC gained "wheeling" and other authority, and more drastically in the Energy Policy Act of 2005, when FERC assumed transmission reliability, heavier enforcement, and additional powers. *Id*. §§ 824i–824w (2006).

[78] *Id*. § 824(b)(1), (c)–(e); *see also* New York v. Fed. Energy Regulatory Comm'n, 535 U.S. 1, 20–24 (2002).

[79] *See* Bushnell & Wolfram, *supra* note 73, at 5.

[80] *See id.*

[81] *See* Weaver, *supra* note 13, at 139–40; Christopher G. Bond, Note, *Shedding New Light on the Economics of Electric Restructuring: Are Retail Markets for Electricity the Answer to Rising Energy Costs?*, 33 CONN. L. REV. 1311, 1311–12 (2001).

[82] *See* Cudahy & Henderson, *supra* note 18, at 108 (cautioning that one must not "put all your eggs in one basket" in terms of energy policy). A 2007 FTC report summarized the state of the transition to retail competition:

> In most profiled states, retail competition has not developed as expected for all customer classes. Few residential customers have switched to alternative providers. (Exceptions include Massachusetts, New York, and Texas.) In most of the profiled states, few residential customers have a wide variety of alternative suppliers and pricing options. . . . To the extent that multiple suppliers serve retail customers, prices have not decreased as expected, and the range of new options and services is often limited.

sector at the wholesale level,[83] that competitive transformation has not, and very well may never, reach fully down to the everyday consumer.

Today, electricity at the local level remains heavily regulated. State public utility commissions control the prices that utilities charge retail consumers, review the "prudence" of their power contracts and generation acquisition decisions, dictate when and where such facilities may be built, and involve themselves in utilities' plans for the kind and amount of generation sources they use.[84] Indeed, even in the wholesale context, the promise of competition has summoned the specter of inefficiency. Charges of gaming, allegations of reciprocal dealing, and proof of clear market manipulation have incited both political and regulatory backlashes.[85] In response, Congress emboldened FERC with powerful new enforcement authority,[86] and FERC in turn has built a complex web of regulation on top of the competition it says it promotes: pervasive market rules,[87] incentives for installing independent market monitors,[88] heightened enforcement activity,[89] and, in certain circumstances, plain limits on

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FED. TRADE COMM'N, REPORT TO CONGRESS ON COMPETITION IN WHOLESALE AND RETAIL MARKETS FOR ELECTRIC ENERGY PURSUANT TO SECTION 1815 OF THE ENERGY POLICY ACT OF 2005, at 6–7 (2007), *available at* http://www.ferc.gov/legal/fed-sta/ene-pol-act/epact-final-rpt.pdf.

[83] *See* KENNETH ROSE, INST. OF PUB. UTIL., MICH. STATE UNIV., 2004 PERFORMANCE REVIEW OF ELECTRIC POWER MARKETS (Aug. 25, 2004), *available at* http://www.hks.harvard.edu/hepg/Papers/Rose.2004.perf.review.elec.mkts.0804.pdf ("[M]ost states have decided to either discontinue their efforts to implement retail access or have stopped considering adopting it altogether . . . . In fact, no state has passed restructuring legislation since June of 2000 . . . . A total of 32 states have repealed, delayed, suspended or are now no longer considering retail access."); *see also* Eisen, *supra* note 65, at 558 (discussing the decrease in meaningful competition at the state level); James W. Moeller, *Of Credits and Quotas: Federal Tax Incentives for Renewable Resources, State Renewable Portfolio Standards, and the Evolution of Proposals for a Federal Renewable Portfolio Standard*, 15 FORDHAM ENVTL. L. REV. 69, 177–78 (2004) (discussing the decrease in competition after Enron and the California energy crisis).

[84] *See* Ralph Cavanagh, *Least-Cost Planning Imperatives for Electric Utilities and Their Regulators*, 10 HARV. ENVTL. L. REV. 299, 300 (1986); *see also* Kevin F. Duffy, *Will the Supreme Court Lose Patience with Prudence?*, 9 ENERGY L.J. 83, 84 (1988) (discussing the state commision's ability to examine "prudence").

[85] Prohibition of Energy Market Manipulation, 71 Fed. Reg. 4244 (Jan. 19, 2006); *see also* Weaver, *supra* note 13, at 89–108 (discussing legislative changes to FERC's powers); Heather Curlee, Note, *Examining EPAct 2005: A Prospective Look at the Changing Regulatory Approach of the FERC*, 63 WASH. & LEE L. REV. 1649, 1678–90 (2006) (reviewing FERC's new regulatory approach).

[86] *See* 16 U.S.C. § 825o-1 (2006); *see also* 15 U.S.C. § 717t-1 (2006) (providing authority for FERC to issue civil penalties under the Natural Gas Act).

[87] *See, e.g.*, Amendments to Codes of Conduct for Unbundled Sales Service and for Persons Holding Blanket Marketing Certificates, 71 Fed. Reg. 9709 (Feb. 16, 2006).

[88] AM. PUB. POWER ASS'N, CONSUMERS IN PERIL: WHY RTO-RUN ELECTRICITY MARKETS FAIL TO PRODUCE JUST AND REASONABLE ELECTRIC RATES 32 (2008), *available at* http://www.appanet.org/files/PDFs/ConsumersinPeril.pdf; *see also* John S. Moot, *Whither Order No. 888?*, 26 ENERGY L.J. 327, 327 n.4 (2005).

[89] *See* Press Release, Fed. Energy Regulatory Comm'n, Commission Imposes First Penalties Under EPAct Authority (Jan. 18, 2007), *available at* http://ferc.gov/news/news-releases/2007/2007-1/01-18-07-M-3.pdf (reporting an assessment of $22.5 million in civil penalties under a new civil penalty enforcement authority); *see also* Joseph T. Kelliher, Chairman, Fed. Energy Regulatory Comm'n, Statement for the Conference on Enforcement Policy (Nov. 14, 2007), *available at*

competition.[90] The result is that while the move to restructuring "represents a sharp departure from traditional thinking and historical practice,"[91] the "curious paradox of a market-based regulatory reform is that we may end up with more rather than less regulation."[92]

What these conflicting trends ultimately mean for electricity is unclear, but the potential range of implications is undeniably important. If electric power is to move forward, if it is to become something different from what it is now, policy innovation is necessary. The industry's strong history of vertical integration, and the regulatory compact itself, are too engrained to allow for a new era of energy regulation without a meaningful catalyst. Environmentalists consistently question how to make electricity cleaner, more efficient, more sustainable[93]—how to use energy to promote environmental goals, a kind of "environmental" electricity, one might say—but none of these changes are likely to materialize absent political action of some sort. Consider the results of the industry's transformation to date. There was a broad move to competition, and some gains in economic efficiency as a result,[94] but relatively no action on the environmental front, even when the policy window for making that move should have been so open.

To be sure, some overtures in this direction have been made. The very statute that helped kick off the rise of independent power producers, the Public Utility Regulatory Policies Act of 1978 ("PURPA"),[95] embedded within its competitive objectives various environmental goals, including increasing national renewable energy use.[96] Partially in response to PURPA, states increasingly implemented the process of "integrated resource planning,"[97] which can help promote environmentally-friendly

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http://www.ferc.gov/news/statements-speeches/kelliher/2007/11-14-07-kelliher.pdf ("It is a personal priority for me as Chairman to strengthen compliance programs in the regulated community.").

[90] Market-Based Rates for Wholesale Sales of Electric Energy, Capacity and Ancillary Services by Public Utilities, Order No. 697, 119 F.E.R.C. ¶ 61,295, at pp. 404–07 (2007) (recognizing concerns that FERC's market-based rates foreclose utilities from competing in their home service territories).

[91] David B. Spence, *Can Law Manage Competitive Energy Markets?*, 93 CORNELL L. REV. 765, 767 (2008).

[92] Tomain, *Past and Future*, *supra* note 35, at 474.

[93] *But see* Roy Fuller, *Wind Energy Development on BLM Lands*, 24 J. LAND RESOURCES & ENVTL. L. 613, 616–17 (2004) (noting some environmentalists' resistance to renewables development).

[94] *See* Blumsack, *supra* note 19, at 151–52; Sidney A. Shapiro & Joseph P. Tomain, *Rethinking Reform of Electricity Markets*, 40 WAKE FOREST L. REV. 497, 542 (2005); Tomain, *Electricity Restructuring*, *supra* note 27, at 845–46.

[95] Pub. L. No. 95-617, § 2, 92 Stat. 3117, 3119 (codified at 16 U.S.C. § 2601–2645 (2006)).

[96] *E.g.*, 16 U.S.C. § 824a-3(b) (2006).

[97] Section 111 of the Energy Policy Act of 1992 required utilities to engage in this process of

> planning . . . for new energy resources [by] evaluat[ing] the full range of alternatives, including new generating capacity, power purchases, energy conservation and efficiency, cogeneration and district heating and cooling applications, and renewable energy resources, in order to provide adequate and reliable service to [the utility's] electric customers at the lowest system cost.

energy by requiring utilities to build long-term, forward-looking, publicly-involved analyses of their generation portfolios.[98] Likewise, different states have adopted various other measures to make electricity more sustainable. These include efficiency and conservation incentives, such as "negawatt" acquisition programs;[99] "decoupling" power consumption from utility profits;[100] removing obstacles to small-scale "distributed generation" located on consumers' premises;[101] creating "system benefit funds;"[102] and eliminating energy-intensive rate structures, such as "declining-block" rates, that perversely afford consumers lower prices for using more electricity.[103]

But despite these efforts, the electric industry's core is unchanged. The market and the market players may be different post-restructuring, but total power consumption grows unabated and the mix of electric generation fuels, while trending to relatively cleaner natural gas, is not that different from decades ago.[104] For all the regulatory upheaval, the sum revisions, from an environmental perspective at least, have been on the margins. Competition alone has not delivered electricity to a new, environmental state.[105] Alternative energies are still "alternative," not the norm.[106]

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16 U.S.C. § 2602(19); *see also id*. § 2621(d)(7) (providing that "each electric utility shall employ integrated resource planning").

[98] *See, e.g.*, Scott F. Bertschi, Comment, *Integrated Resource Planning and Demand-Side Management in Electric Utility Regulation: Public Utility Panacea or a Waste of Energy?*, 43 EMORY L.J. 815, 830 (1994); Cavanagh, *supra* note 84, at 322–23.

[99] *See* Black & Pierce, *supra* note 76, at 1354–69.

[100] *See* Sandra Levine & Katie Kendall, *Energy Efficiency and Conservation: Opportunities, Obstacles, and Experiences*, 8 VT. J. ENVTL. L. 101, 101 (2006) (asserting that energy efficiency and conservation decrease pollution and lower overall energy costs); Jeff D. Makholm, *"Decoupling" for Energy Distributors: Changing 19th Century Tariff Structures To Address 21st Century Energy Markets*, 29 ENERGY L.J. 157, 172 (2008) (discussing the emergence of decoupling and arguing that decoupling carries the potential to "reduce the frequency of rate cases").

[101] *Compare* Kristin Bluvas, Comment, *Distributed Generation: A Step Forward in United States Energy Policy*, 70 ALB. L. REV. 1589, 1614 (2006) (asserting that distributed generation "addresses major energy problems such as system instability, infrastructure underinvestment, and fossil fuel dependency"), *with* Anthony Allen, Comment, *The Legal Impediments to Distributed Generation*, 23 ENERGY L.J. 505, 522–23 (2002) (discussing the current debate over distributed generation implementation and arguing that the benefits of distributed generation are "too plentiful, and too compelling to be overlooked").

[102] Mark Bolinger et al., *An Overview of Investments by State Renewable Energy Funds in Large-Scale Renewable Generation Projects*, ELECTRICITY J., Jan.–Feb. 2005, at 78, 78.

[103] Tomain, *Past and Future*, *supra* note 35, at 451–52; *see also* Shapiro & Tomain, *supra* note 94, at 508.

[104] EIA, ANNUAL ENERGY REVIEW, *supra* note 22, at 42–46.

[105] *See* Shapiro & Tomain, *supra* note 94, at 542 ("The valuable effort to restructure and reform electricity markets is not addressed to reducing the pollution and other environmental problems caused by relying on fossil fuels, particularly coal, to generate electricity."); Fred Zalcman & David Nichols, *Competition, Environment, and the Electric Industry*, 18 PACE ENVTL. L. REV. 287, 291 (2001) ("Restructuring is driven by economic objectives, not environmental concerns.").

[106] *See* Lincoln L. Davies, *Energy Policy Today and Tomorrow—Toward Sustainability?*, 29 J. LAND RESOURCES & ENVTL. L. 71, 75 (2009) (describing the limited consumption of energy obtained from alternative sources).

III. THE SHIFTING LANDSCAPE: THE RPS

Of the past decades' legal innovations seeking to simultaneously advance energy and environmental objectives, the RPS is perhaps the most widely adopted. The RPS is at once simple and complex. It is simple in its concept. The RPS requires electric utilities to ensure that a certain percentage of retail power they sell comes from renewable resources. The elegance of this approach is obvious. RPSs harness the power of markets to allow participants to find the most efficient result themselves.[107] RPSs do not specify the use of a certain fuel, but instead allow utilities to choose any qualifying renewable fuel based on the characteristics the utility values most, whether those are price, quantity, duration, intermittency, reliability, fuel diversity, or any combination thereof.

But the very proviso of what qualifies as "renewable" reveals RPSs' complexity. Policy questions, such as what counts as renewable, whether to preference certain technologies, who is subject to the law, how to measure the RPS requirement, and more, inevitably erect an intricate regulatory scaffold. This structure becomes even more sophisticated when questions about how to enforce the RPS come into play. While the RPS construct is relatively uncomplicated, actually implementing it is much less so.[108]

A. *Origins and Objectives*

RPSs are not new—Iowa adopted the first RPS in the United States in 1983[109]—but their prevalence is. In 1996, Iowa remained the country's

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[107] Barry Rabe, *Race to the Top: The Expanding Role of U.S. State Renewable Portfolio Standards*, SUSTAINABLE DEV. L. & POL'Y, Spring 2007, at 10, 16 [hereinafter Rabe, *Expanding Role*].

[108] Robin J. Lunt, Comment, *Recharging U.S. Energy Policy: Advocating for a National Renewable Portfolio Standard*, 25 UCLA J. ENVTL. L. & POL'Y 371, 381 (2007); *cf.* Joel B. Eisen, *The Environmental Responsibility of the Regionalizing Electric Utility Industry*, 15 DUKE ENVTL. L. & POL'Y F. 295, 310–12 (2005) (explaining the complexity of accounting for electricity generation location for RPS purposes).

[109] IOWA CODE § 476.44 (2008). In many ways, the RPS is the offspring of PURPA and integrated resource planning. The RPS finds a precursor in PURPA because both promote increased renewables use. PURPA required utilities to purchase energy from renewables-based generators at up to "avoided cost" (or incentive) rates as long as the renewable source had a "production capacity" of eighty megawatts or less. 16 U.S.C. §§ 796(17)(a)(ii), 824A-3(a) (2006). The RPS does the same thing, but without the eighty megawatt restriction, and without tying the purchase requirement to independent power producers.

The RPS also finds lineage in integrated resource planning because both seek to infuse public policy into utility planning decisions. "Twenty years ago[, utilities'] process of making resource decisions was predominantly a function of cost calculation and selection of the 'least cost' options." Kotzmann, *supra* note 24, at 21. Integrated resource planning changed this. It imbued utilities' planning with public input and regulatory involvement, swinging their decisions away from cost alone. The RPS does the same thing. It injects a publicly-informed substantive mandate into the planning process, namely, that a portion of the utility's energy comes from renewables.

sole RPS adopter. By 1999, the tally had risen to eight. And by 2004, the figure had more than doubled to eighteen, or half of today's total.[110]

Legislatures cite wide-ranging rationales for RPSs. Juxtaposition of even two states' approaches illustrate the point. When Iowa adopted its law in 1983, its legislature cited a policy of "encourag[ing] the *development of alternate energy* . . . in order to conserve our finite and expensive energy resources."[111] By contrast, enacting its RPS in 2006, Washington declared the need to "promote energy independence[,] . . . stabilize electricity prices[,] . . . provide economic benefits for Washington counties and farmers[, and] . . . protect clean air and water," just to name a few.[112] In short, RPSs initially were adopted as a way "to support renewable energy development in competitively restructured electricity markets," but today politicians view them as serving much broader aims.[113]

Claiming RPSs as environmental-economic-political cure-alls is tempting. It is clear that the RPS has "emerged as one of the most important drivers of renewable energy capacity additions" in the United States.[114] RPSs also can work hand-in-glove with climate change policy to help reduce greenhouse gas emissions.[115] Developing renewable energy projects likewise promises economic benefits in both technology and construction, as the recent economic stimulus legislation heavily anticipates.[116] But these benefits are largely ancillary to RPSs' core objective: promoting a new energy market in renewables to, in turn, spur the transition to a sustainably fueled society.

To be fair, RPSs' ancillary benefits are hardly trivial. One set of commentators has conceptualized six categories of benefits from renewable electricity: (1) "[e]nvironmental benefits, including greenhouse gas mitigation;" (2) price and reliability benefits from a more diverse and disperse generator mix; (3) preparation, or "readiness," benefits in the event of fuel price spikes or supply disruptions; (4) export potential for renewable technologies; (5) long-run national benefits from energy independence; and (6) "[s]ustainable-energy-path benefits" such as fossil

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[110] RABE, RACE TO THE TOP, *supra* note 11, at tbl.1.

[111] IOWA CODE § 476.41 (emphasis added).

[112] WASH. REV. CODE § 19.285.020 (2010).

[113] Karlynn S. Cory & Blair G. Swezey, *Renewable Portfolio Standards in the States: Balancing Goals and Rules*, ELECTRICITY J., May 2007, at 21, 21.

[114] RYAN WISER & GALEN BARBOSE, LAWRENCE BERKELEY NAT'L LAB., RENEWABLE PORTFOLIO STANDARDS IN THE UNITED STATES: A STATUS REPORT WITH DATA THROUGH 2007, at 2 (2008), *available at* http://eetd.lbl.gov/ea/ems/reports/lbnl-154e-revised.pdf.

[115] *See, e.g.*, Rabe, *Expanding Role*, *supra* note 107, at 11–13 (comparing the motivations of the Texas and Massachusetts legislatures).

[116] *See* NAT'L CONF. OF STATE LEGISLATURES, SUMMARY OF ENERGY RELATED PROVISIONS IN THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (PUBLIC LAW NO.: 111-005), *available at* http://www.ncsl.org/Documents/statefed/EnergyProvisions_ARRA.pdf.

fuel conservation for later generations.[117] Benjamin Sovacool and Christopher Cooper put a slightly different spin on the question, contending that RPSs help "correct three major failures" in the electricity markets: electricity pricing's failure to account for the social costs of production, unfair competitive advantages for nuclear and fossil fuels from governmental subsidies, and the "free rider problem" that investors do not recoup just profits from renewable outlays because everyone benefits from renewables deployment.[118]

B. *Mechanisms*

The state-adopted RPS typically functions in one or two parts. First, the RPS dictates that certain participants in the retail electricity market, usually large utilities but sometimes other players as well,[119] acquire a certain percentage of their electricity from renewable sources. This percentage then ramps up over time, peaking at a statutory target generally years or decades later. State public utility commissions typically assume regulatory oversight. Penalties and enforcement mechanisms vary widely, but the ultimate onus to obtain renewably-fueled power generally rests with the electricity provider subject to the RPS. In this regard, North Carolina's statute is structurally typical of many state RPSs:

> Each electric public utility in the State shall be subject to a Renewable Energy and Energy Efficiency Portfolio Standard (REPS) according to the following schedule:
>
> | Calendar Year | REPS Requirement |
> |---|---|
> | 2012 | 3% of 2011 North Carolina retail sales |
> | 2015 | 6% of 2014 North Carolina retail sales |
> | 2018 | 10% of 2017 North Carolina retail sales |
> | 2021 [on] | 12.5% of 2020 North Carolina retail sales[120] |

The second regulatory tool that often—but not always—accompanies the RPS percentage target is a credit mechanism for "rights" to renewable power production. That is, rather than actually requiring renewable energy

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[117] Brent M. Haddad & Paul Jefferiss, *Forging Consensus on National Renewables Policy: The Renewables Portfolio Standard and the National Public Benefits Trust Fund*, ELECTRICITY J., Mar. 1999, at 68, 69.

[118] Benjamin K. Sovacool & Christopher Cooper, *State Efforts To Promote Renewable Energy: Tripping the Horse with the Cart?*, SUSTAINABLE DEV. L. & POL'Y, Fall 2007, at 5, 5.

[119] The electric utility industry is comprised of three core types of providers: investor-owned utilities ("IOUs"), public-owned utilities ("POUs"), and cooperative entities ("co-ops"). There are far fewer IOUs than POUs, but IOUs provide roughly seventy-five percent of the electricity consumed in the United States. All three categories might purchase power from independent power producers ("IPPs").

[120] N.C. GEN. STAT. § 62-133.8(b)(1) (2010).

production from each utility, RPSs use RECs as a proxy for their production requirement.[121] The idea is much like environmental law's pollution trading schemes.[122] Parties can use credits to more efficiently comply with the RPS. For example, a utility that produces renewable electricity in excess of its RPS obligation can sell the credits it does not need to utilities lacking their own renewable facilities. The result is that the purchasing utilities pay only the market price of the energy itself, not the presumably higher capital cost of building new facilities. Either way, the total amount of renewable power produced remains the same. Only the parties producing it and the cost of doing so change. Both should be more efficient.[123]

Design questions abound on how to implement these two relatively straightforward RPS components. The leading RPS guidebook weighs in at well over one hundred pages and chronicles no fewer than two dozen key design issues.[124] Apart from fitting an RPS into a state's existing regulatory regime, these questions might be reduced to four core RPS design traits.

First is the trait of the RPS's *aspirational aggressiveness*. Is the RPS mandatory or voluntary? That is, does it compel the addition of renewable generating facilities, such as in Maine,[125] or does it merely push utilities toward that goal, such as in Utah?[126] Is the RPS's ultimate target

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[121] Cory & Swezey, *supra* note 113, at 22.

[122] Pollution trading schemes allow regulated entities to purchase credits for the "right" to pollute rather than actually decreasing their pollution. The idea is not only to reach the same overall total amount of pollution, but also to do so more efficiently than if each company had to reduce the same share no matter the cost. *See, e.g.*, SALZMAN & THOMPSON, *supra* note 21, at 104–07 (discussing emissions allowances policies); E. Donald Elliott, *Environmental Markets and Beyond: Three Modest Proposals for the Future of Environmental Law*, 29 CAP. U. L. REV. 245, 247–48, 251–54 (2001) (describing aspects of market-based approaches to environmental governance); Robert W. Hahn & Robert N. Stavins, *Incentive-Based Environmental Regulation: A New Era from an Old Idea?*, 18 ECOLOGY L.Q. 1, 15–19 (1991) (explaining four contexts for incentive-based policies in the United States: emissions, lead, water pollution, and water rights); Paul L. Joskow & Richard Schmalensee, *The Political Economy of Market-Based Environmental Policy: The U.S. Acid Rain Program*, 41 J.L. & ECON. 37, 80–81 (1998) (concluding that "[e]nvironmental regulation is an excellent example of interest group politics mediated through legislative and regulatory processes[,]" which, in the context of the Clean Air Act, resulted in "a major long-term program to reduce pollution using an innovative tradable emissions permit system").

[123] *See* Panel, *EBA Climate Change Primer: Financing a Renewable Project*, 29 ENERGY L.J. 195, 204 (2008); Joseph P. Tomain, *Smart Energy Path: How Willie Nelson Saved the Planet*, 36 CUMB. L. REV. 417, 449 (2006).

[124] NANCY RADER & SCOTT HEMPLING, THE RENEWABLES PORTFOLIO STANDARD: A PRACTICAL GUIDE (2001), *available at* http://www.naruc.affiniscape.com/associations/1773/files/rps.pdf; *see also* U.S. ENVTL. PROT. AGENCY, CLEAN ENERGY-ENVIRONMENT GUIDE TO ACTION: POLICIES, BEST PRACTICES, AND ACTION STEPS FOR STATES 5-1 to 5-2 (2006), *available at* http://www.chs.ubc.ca/archives/files/Clean-Energy-Guide.pdf (listing effective policies for "increasing the amount of clean energy supply"); Cory & Swezey, *supra* note 113, at 30–31 (explaining that states can pursue numerous policy goals when enacting an RPS and explaining that states' available resources differ, which can result in states not having uniform RPS policies).

[125] ME. REV. STAT. ANN. tit. 35-A, §§ 3210-A(3), 3210-C(1)(C)(1) (2009).

[126] UTAH CODE ANN. §§ 54-17-602(1)(a), 54-7-12(2)(c)(ii) (2009).

aggressive or lax? That is, does the RPS mandate a small amount of new renewable power, such as Iowa's 105 megawatt-hour ("MWh") requirement,[127] or does it call for a real market transformation, such as Hawaii's dictate of "[f]orty per cent of its net electricity sales by December 31, 2030"?[128]

Second, and in part the flipside of its aspirational aggressiveness, is the RPS's *salience distortion*. "Salience distortion" is the term used by Professor Christopher Peterson to measure the extent to which regulatory tools stretch the truth about—distort—what they say they accomplish and what they actually accomplish.[129] Although Peterson has used the concept in credit markets to show how legislative "limits" on payday loan rates often are dozens of times higher than the way the law expresses them,[130] the concept can be used to describe requirements in other areas of the law as well.[131] It applies here. Does the RPS require actual renewable energy, or does it merely mandate new generation capacity that could go unused?[132] Does it mandate newly constructed generation, or does it dilute its goal by counting existing resources? Does it apply without exception, or does it engage in regulatory puffery by allowing, for instance, double-counting of some resources[133] or the reduction of its mandate for others?[134]

Third is the RPS's *market definition*. Because the core RPS objective is to incentivize renewable technology, the way in which any state's RPS defines the renewable market is critical. Is the RPS inclusive or restrictive? That is, does it count as "renewable" only wind, solar, and small hydroelectric facilities, or do other new and emerging technologies qualify as well? Does the RPS give credit to renewable energy produced anywhere on the grid, or does it limit qualification to in-state sources? Does it use a credit mechanism, or does it limit eligibility to owned or purchased power?

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[127] IOWA CODE § 476.44(2) (2008).

[128] HAW. REV. STAT. ANN. § 269-92(a)(4) (West 2010).

[129] Christopher L. Peterson, *Usury Law, Payday Loans, and Statutory Sleight of Hand: Salience Distortion in American Credit Pricing Limits*, 92 MINN. L. REV. 1110, 1114–15 (2008); *see also* Daniel Kahneman, *Maps of Bounded Rationality: Psychology for Behavioral Economists*, 93 AM. ECON. REV. 1449, 1468 (2003) (discussing the conclusions of studies regarding the detection of and reaction to the misweighting of information); Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 SCI. 1124, 1131 (1974) (describing "three heuristics that are employed in making judgments under uncertainty . . . [which, though] highly economical and usually effective, [can] . . . lead to systematic and predictable errors").

[130] *See* Peterson, *supra* note 129, at 1164.

[131] *See id.* at 1115, 1161 n.223.

[132] *See, e.g.*, TEX. UTIL. CODE ANN. § 39.904(a) (Vernon 2010).

[133] Many states give extra credit—sometimes as "set-asides," sometimes as "multipliers"—for certain resources, especially solar. *See* WISER & BARBOSE, *supra* note 114, at 16.

[134] Some states allow non-renewable resources, such as advanced coal or nuclear, to count. Many also credit efficiency measures. *See* COLO. REV. STAT. § 40-2-124(1)(c)(IV) (2009) (efficiency); VA. CODE ANN. §§ 56-576, 56-585.2(B) (West 2009) (nuclear).

Finally, there is the RPS's *planning and enforcement rigor*. Beyond the matter of how high an RPS sets its aim is how well it follows through. Does the RPS impose significant enforcement penalties, or is it effectively toothless? If they do comply, what assurance do utilities have that they will recoup their costs? And how is compliance measured over time? Are utilities required to submit advance plans explaining how they intend to comply with the RPS, or is regulatory review triggered only once a problem emerges?

C. *Power Forward?: Environmental Electricity*

That so many questions can be raised in the abstract about RPSs' possible design characteristics should foreshadow the prospect of incredibly diverse—perhaps even irreconcilable—RPS requirements in the concrete. Indeed, more than one commentator has pointed to this risk of hodgepodge regulation as a primary reason for adopting a federal standard.[135]

The risks presented by such an internally conflicted regime are not, however, as straightforward as one initially might think. Whereas car makers long have fought against the possibility of fifty different tailpipe emission limits,[136] or trucking companies have resisted varying safety regulations,[137] electricity does not function the same way. Automobile manufacturers need uniform regulation because a vehicle made in Kentucky might be sold in Mississippi just as easily as in Maine. A long-haul truck traveling from Saginaw to San Francisco likewise cannot reasonably be expected to change tires, mirrors, or mud flaps every time it crosses the eight state borders along the way. Electricity is different. Although the courts repeatedly have recognized that electrons cannot be traced,[138] this does not mean that power produced in Miami can be sold in Los Angeles. There are three primary power grids in the United States—the Texas Interconnect, the Eastern Interconnect, and the Western

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[135] *See* Lunt, *supra* note 108, at 405; *see also* Benjamin K. Sovacool & Christopher Cooper, *Congress Got It Wrong: The Case for a National Renewable Portfolio Standard and Implications for Policy*, 3 ENVTL. & ENERGY L. & POL'Y J. 85, 92–94 (2008) (providing examples of various disparate state RPS policies).

[136] *See* Motor Vehicle Mfrs. Ass'n of U.S. v. N.Y. State Dep't of Envtl. Conserv., 17 F.3d 521, 524–25 (2d Cir. 1994) (discussing the auto industry's preference for preemption of state emissions standards by the Clean Air Act); *see also* William W. Buzbee, *Asymmetrical Regulation: Risk, Preemption, and the Floor/Ceiling Distinction*, 82 N.Y.U. L. REV. 1547, 1618 (2007); Kirsten H. Engel & Scott R. Saleska, *Subglobal Regulation of the Global Commons: The Case of Climate Change*, 32 ECOLOGY L.Q. 183, 224–25 (2005).

[137] *See, e.g.*, Bibb v. Navajo Freight Lines, Inc., 359 U.S. 520, 529–30 (1959) (unique mud flaps); S. Pac. Co. v. Arizona *ex rel.* Sullivan, 325 U.S. 761, 763–64 (1945) (train lengths).

[138] *See, e.g.*, New York v. Fed. Energy Regulatory Comm'n, 535 U.S. 1, 7 n.5 (2002) (recognizing that once energy is placed into the grid, "consumers then draw undifferentiated energy from that grid" (internal quotation and citation omitted)); Fed. Power Comm'n v. Fla. Power & Light Co., 404 U.S. 453, 458 (1972) (finding that transmitted electricity constitutes interstate commerce).

Interconnect[139]—and power generally does not flow readily among them.[140] Thus, it would be most unusual for a California utility, for instance, to have a power sales agreement with a counterpart in Florida.

This fragmentation of the "national" electric grid into multiple parts means that, presumptively at least, complaints about regulatory conflicts should not be as strong for a national RPS as it is in other industries. Two key factors, however, change that calculus.

First, even though the national electrical system is not seamless,[141] it is becoming more so. FERC's encouragement of RTOs is one factor driving this trend.[142] Another is that utilities often serve customers in multiple states. MidAmerican Energy Holdings Company, for instance, has subsidiaries that serve customers from Oregon to Illinois and virtually every state in between.[143] American Electric Power serves 5.2 million customers using 38,953 miles of transmission lines in a 197,500 square mile service territory that covers parts of Arkansas, Indiana, Kentucky, Louisiana, Michigan, Ohio, Oklahoma, Tennessee, Texas, Virginia, and West Virginia.[144] Even comparatively small El Paso Electric is not limited to a single state; it serves both Texas and New Mexico.[145] Moreover, some commentators believe that this trend of multi-state utilities is only likely to increase because the Energy Policy Act of 2005 largely repealed PUHCA, which previously had imposed geographic limits on utility mergers.[146] Now that those limits are gone, utilities operating in more than one state may well increase—and face the prospect of needing to comply with multiple RPSs, a task both costly and inefficient.[147]

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[139] The Texas Interconnect covers most of Texas. The Eastern Interconnect encompasses part of Montana, part of South Dakota, Nebraska, Kansas, Oklahoma, part of Texas, and points east. The Western Interconnect includes the rest of Montana, the rest of South Dakota, Colorado, New Mexico, the rest of Texas, and all points west. U.S. Dep't of Energy, Interconnections of the North American Electric Reliability Council in the Contiguous United States, 1998, http://www.eia.doe.gov/electricity/page/prim2/fig15.gif (last visited June 17, 2010).

[140] *Id.*; *see also* PETER C. CHRISTENSEN, RETAIL WHEELING: A GUIDE FOR END-USERS 21 (2d ed. 1996); Erich W. Struble, Comment, *National Interest Electric Transmission Corridors: Will State Regulators Remain Relevant?*, 113 PENN ST. L. REV. 575, 581 n.32 (2008) ("[T]here is no national power grid.").

[141] *See* Remedying Undue Discrimination Through Open Access Transmission Service and Standard Electricity Market Design, 67 Fed. Reg. 55,452, 55,464 (Aug. 29, 2002) (noting the difficulty of moving power across seams and the different transmission rules that apply to them).

[142] For more on the mechanics of RTO implementation, see generally Clinton A. Vince et al., *What Is Happening and Where in the World of RTOs and ISOs?*, 27 ENERGY L.J. 65 (2006).

[143] *See* MidAmerican Energy, About Us: Facts at a Glance, http://www.midamericanenergy.com/aboutus2.aspx (last visited June 17, 2010); Pacificorp, Company Quick Facts, http://www.pacificorp.com/about/co/cqf.html (last visited June 17, 2010).

[144] American Electric Power, About Us, http://www.aep.com/about/ (last visited June 17, 2010).

[145] El Paso Electric, Service Territory Map, http://www.epelectric.com (follow "About EPE"; then follow "Service Area") (last visited June 17, 2010).

[146] Energy Policy Act of 2005, Pub. L. No. 109-58, §§ 1261–1263, 119 Stat. 594, 972–74 (2005).

[147] *See* Benjamin K. Sovacool & Christopher Cooper, *Green Means 'Go?'—A Colorful Approach to a U.S. National Renewable Portfolio Standard*, ELECTRICITY J., Aug.–Sept. 2006, at 19, 22. *But cf.* Joshua P. Fershee, *Misguided Energy: Why Recent Legislative, Regulatory, and Market Initiatives Are*

Second, even if utilities were not increasingly spanning geographical boundaries, the risk of conflicting RPSs would still be problematic. The reason is RECs. RECs change everything. With RECs, the lack of transmission capacity, or even interconnections, vanish as barriers to RPS compliance because the California utility that is short on renewable energy no longer needs to buy wind or solar power from Texas or Florida. Instead, it could buy an REC from either state, or any other, because RECs transform the RPS from a strictly regulatory measure to a financial one. They make geography and grids effectively irrelevant.[148]

What this means is that the concern over a crazy-quilt RPS regime must be different from the concern for non-uniform regulation in other industries. For the RPS, it is only partly about the cost and inefficiency of complying with conflicting standards. It is much more about fostering renewables development through an effective and efficient market, a market where geography does not matter.

This is why, in short, complaints that "fifty state-created and controlled RPSs" can only create an unwieldy regulatory "patchwork," with each state administering its own program and "duplicating efforts and reinventing the wheel each time,"[149] are only partially correct. The real critique must focus on RPSs' real objective: its ability to move renewable power forward, to push this "environmental electricity" past the roughly ten percent market share it has held since the 1980s.[150]

It is this critique, in fact, about markets, not just about regulatory and compliance costs, that forms the foundational argument for a federal RPS.

IV. THE FEDERAL-STATE RPS DEBATE

Despite state RPSs' rapid emergence, no federal mandate has found footing. This is not for a lack of effort. More than two dozen federal RPS

Insufficient To Improve the U.S. Energy Infrastructure, 44 HARV. J. ON LEGIS. 327, 338 (2007) (noting that "PUHCA's repeal does not eliminate all regulatory obstacles to utility-related mergers and acquisitions"); Robert J. Michaels, *National Renewable Portfolio Standard: Smart Policy or Misguided Gesture?*, 29 ENERGY L.J. 79, 91 n.42 (2008) [hereinafter Michaels, *Smart Policy*] (pointing out that state review often is more likely than PUHCA or FPA review to torpedo proposed mergers).

[148] That is, of course, "irrelevant" from the perspective of REC trading. From the perspective of developing new renewables projects, it is well recognized that transmission is a major—and important—hurdle to deployment. *E.g.*, STEVEN FERREY, THE LAW OF INDEPENDENT POWER § 2:11 (2009).

[149] Lunt, *supra* note 108, at 405; *see also* Sovacool & Cooper, *Congress Got It Wrong*, *supra* note 135, at 92–94.

[150] This figure refers to generated electricity. The percentage is comparable for generation capacity. It would be much lower if hydroelectric were excluded. *See* EIA, ANNUAL ENERGY REVIEW, *supra* note 22, at 231, 264. For cumulative energy consumption (not just electricity), renewables consistently have comprised less than ten percent of the nation's consumption. Today, the percentage is actually less than it was in 1949. *See id*. at 9.

proposals have been introduced in Congress since 1996.[151] None has passed. Although the possibility of a federal RPS is increasingly receiving more attention, and its odds of adoption seem increasingly likely—an amendment to the Energy Policy Act of 2005 providing for a federal RPS passed the Senate,[152] and a national RPS was part of the Waxman-Markey bill that passed the House last year[153]—the debate over a federal RPS continues.

The debate has centered more on whether there should be a federal RPS at all than on what a federal RPS should look like. One of the proposals currently dominating the stage, in structure, is not much different from many state initiatives. It would set a twenty percent renewable target by 2021, with this mandate gradually escalating over time.[154] It would define eligible renewable power to include wind, solar, geothermal, renewable biomass, and certain hydroelectric sources.[155] It would apply to any retail electric supplier that sells 4,000,000 or more MWh of electricity per year.[156] It would establish a credit system.[157] And it would give enforcement responsibility to FERC.[158] So far at least, none of these details has been the bill's, or its predecessors', chief hang-up.

Instead, scholars and law makers have criticized the possibility of a federal RPS on many fronts, including its potential economic effects, its alleged inefficiency as a regulatory tool, and its intrusion into areas of historical state jurisdiction. For their part, RPS proponents have argued for renewables' environmental benefits, the likelihood of green collar jobs from renewables development, and the growing need for energy independence and security. Together, these clashing views focus the

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[151] Mary Ann Ralls, *Congress Got It Right: There's No Need To Mandate Renewable Portfolio Standards*, 27 ENERGY L.J. 451, 452 n.11 (2006). For an account of early national RPS proposals, see James W. Moeller, *Of Credits and Quotas: Federal Tax Incentives for Renewable Resources, State Renewable Portfolio Standards, and the Evolution of Proposals for a Federal Renewable Portfolio Standard*, 15 FORDHAM ENVTL. L. REV. 69, 131–86 (2004).

[152] Ralls, *supra* note 151, at 452–53 n.11 (discussing S. Amend. 791, 109th Cong. (2005)).

[153] *See* American Clean Energy and Security Act, H.R. 2454, 111th Cong. § 101(a) (2009) (proposing to add § 610, a provision for a "Combined Efficiency and Renewable Electricity Standard," to PURPA).

[154] *Id*.

[155] *Id*.

[156] *See id*. (proposing to amend PURPA, 16 U.S.C. § 2601, by adding § 610(a)(18)(A)–(B)). In 2001, the average annual U.S. household electricity consumption was 10.66 MWh. *See* ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, U.S. HOUSEHOLD ELECTRICITY REPORT, at tbl.US-1 (2005), *available at* http://www.eia.doe.gov/emeu/reps/enduse/er01_us_tab1.html. For comparison purposes, publicly-owned utilities (e.g., municipals) sold only 14.7% of the electricity in the United States in 2000, but every one of the top ten POUs sold more than 4,000,000 MWh. *See* ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, FINANCIAL STATISTICS OF MAJOR U.S. PUBLICLY OWNED ELECTRIC UTILITIES 2000, at 4 tbl.1, 12 tbl.3 (2001), *available at* http://tonto.eia.doe.gov/FTPROOT/electricity/043700.pdf. Investor-owned utilities sold 75.6% of the electricity consumed that year. *Id*. at 4 tbl.1.

[157] H.R. 2454, § 101(a).

[158] *Id*. § 553(b)(2). A similar proposal is contained in S. 1462, the bill that would be the American Clean Energy Leadership Act ("ACELA"). *See id.* § 132(a) (proposing a fifteen percent RPS for all electric utilities "that sell[] electricity to electric consumers for a purpose other than resale").

federal-state RPS debate on three core issues: (1) a federal RPS's likely effect on renewable energy markets; (2) its probable jurisdictional impact; and (3) its "real," or direct, environmental, economic, and security benefits and costs.[159]

A. *Renewable Energy Markets*

The argument for a federal RPS that receives the least attention is the one that may be most important. A national standard is necessary to make the renewables market more liquid, transparent, and uniform. Christopher Berendt makes the case:

> The need for a fluid national [renewables] market has long been recognized by industry and investors alike. Renewable energy . . . has high initial capital costs. Thus, it is essential that . . . investors have reliable information regarding levels of return from the start of the financing process . . . . Liquidity for most investment instruments is enabled by two core factors: (1) a trusted exchange; and (2) a sufficient trading volume across that exchange. *Currently, neither of these factors [are] present* . . . .[160]

The point is that without a national RPS, what counts as "renewable" in one state might not count in another. There is no such thing as a fungible "renewable energy product" today because "renewable" has been defined so many different ways. State RPSs' different definitions render renewable energy less fungible across political boundaries. Thus, the value of renewable power may turn just as much on how a state's law reads as on the product's salient economic features. A national RPS, these advocates urge, is needed because a fractured market will not adequately spur renewable technology development, but a national market would. As Senator Jeff Bingaman has argued, "There is one thing, however, that a State standard will not do—it cannot drive a national market for the technologies . . . ."[161]

The corollary to this argument is that a federal RPS is needed not only to increase market uniformity, but also to increase the total amount of renewable energy production. It is, no doubt, laudable that so many states have adopted RPSs. But those laws reach only as far as their states' borders. If the entire nation—instead of seventy percent of it—is subject

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[159] Amitai Aviram, *The Placebo Effect of Law: Law's Role in Manipulating Perceptions*, 75 GEO. WASH. L. REV. 54, 64 (2006).

[160] 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 54–55 (emphasis added).

[161] 153 CONG. REC. S7582, S7598 (daily ed. June 13, 2007) (statement of Sen. Bingaman).

to an RPS, the aggregate market size for renewables will increase, or at least it will if the federal requirement is set sufficiently high.[162] For a policy that holds as its primary objective increased renewables deployment, this is critical. For emerging markets, especially, size matters.[163]

The common counterpoint to these arguments is double-pronged. First, a federal RPS would duplicate pro-renewables efforts. Second, it would unfairly create regional "winners" and "losers."[164]

Mary Ann Ralls makes the first point. She contends that the sundry state RPSs and various renewable energy purchasing programs and tax and financial incentives "supplant" the need for a federal RPS.[165] Professor Robert Michaels sounds a similar refrain. Observing that the RPS "is only one element of a climate conducive to renewable investment," he argues that there are better ways to incent technology development.[166] "'Infant industry' justifications for supporting renewables development through an RPS are mostly self-serving politics, and in the event public intervention is warranted the RPS is a poor instrument for the job."[167]

Politicians tend to make the second, "winners and losers" argument most vociferously.[168] The allegation is simple: A federal RPS "amounts to a wealth transfer" because renewables-poor states will be forced to buy energy and RECs from renewables-rich states.[169] "[O]ne shoe should not fit every State. States . . . can't do this because of the unfortunate situation of nature . . . . [These States] should not be [compelled] . . . to pay a very big tax . . . ."[170] As a result, one design feature that has been a sticking point for federal proposals is the definition of "renewable." Advocates of nuclear, coal, and other technologies, including states rich in these resources, have played the climate change card to cast the RPS as focused too narrowly on renewables.[171] "I believe very strongly [that] emission-free nuclear power has simply got to be part of the equation," Senator Lisa

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[162] This is a critical point, because a too-low federal RPS would add nothing if set below the cumulative mandate of existing state laws. *See infra* note 285 and accompanying text.

[163] Adam B. Jaffe et al., *Technological Change and the Environment*, *in* 1 HANDBOOK OF ENVIRONMENTAL ECONOMICS 461, 490 (Karl-Göran Mäler & Jeffrey R. Vincent eds., 2003).

[164] Fershee, *supra* note 23, at 59.

[165] Ralls, *supra* note 151, at 456–58.

[166] Michaels, *Smart Policy*, *supra* note 147, at 109.

[167] Michaels, *Politically Correct*, *supra* note 4, at 10.

[168] Fershee, *supra* note 23, at 59.

[169] *Id.*

[170] 151 CONG. REC. S6671, S6680 (daily ed. June 16, 2005) (statement of Sen. Domenici).

[171] *See* Fershee, *supra* note 23, at 59–60; Ralls, *supra* note 151, at 453–54; Benjamin K. Sovacool & Christopher Cooper, *The Hidden Costs of State Renewable Portfolio Standards (RPS)*, 15 BUFF. ENVTL. L.J. 1, 36 (2008).

Murkowski recently declared.[172] "If the goal is to reduce emissions, why we would not include nuclear . . . is just beyond me."[173]

B. *Jurisdiction*

A secondary argument in favor of a federal RPS is that it would eliminate jurisdictional problems created by a multi-state scheme. Most prominent are Dormant Commerce Clause concerns. Even though the Commerce Clause of Article I of the United States Constitution,[174] as interpreted by the Supreme Court in its "negative" or "dormant" aspect, forecloses state protectionism of local resources and businesses,[175] a number of state RPSs favor in-state renewable resources. Arizona, for instance, gives extra compliance credit to utilities that use certain facilities installed or built in the state.[176] And Ohio flatly preferences in-state resources: "At least one-half of the renewable energy resources [required by this RPS] shall be met through facilities located in this state . . . ."[177] Commentators have pointed to this trend, alternately, as rendering state RPSs "constitutionally questionable" and as "the most compelling legal argument" for a national RPS.[178]

Related to state RPSs' Dormant Commerce Clause dilemma is the problem of regulatory "leakage."[179] Leakage is a "common challenge" for policies aimed at social ills.[180] When, for instance, a state heightens pollution limits or a municipality ramps up drug enforcement, polluters and drug sellers may simply "relocate to other jurisdictions" to continue their activities.[181] This phenomenon is known in the environmental arena as the

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[172] Katherine Ling, *Senate Committee Repels Effort To Strike Renewable Provision*, GREENWIRE, May 21, 2009, http://www.eenews.net/Greenwire/2009/05/21/2/.

[173] *Id.*

[174] U.S. CONST. art. 1, § 8.

[175] *E.g.*, Fort Gratiot Sanitary Landfill, Inc., v. Mich. Dep't of Natural Res., 504 U.S. 353, 359 (1992); Wyoming v. Oklahoma, 502 U.S. 437, 454 (1992); Bacchus Imps., Ltd. v. Dias, 468 U.S. 263, 272 (1984); New England Power Co. v. New Hampshire, 455 U.S. 331, 338 (1982).

[176] ARIZ. ADMIN. CODE § R14-2-1806(D), (E) (2008).

[177] OHIO REV. CODE ANN. § 4928.64(B)(3) (West 2000).

[178] Sovacool & Cooper, *Congress Got It Wrong*, *supra* note 135, at 125–26; Brian E. Maxted, Note, *Developing Wind Power in the Commonwealth: No Longer a Quixotic Quest To Build Wind Farms in Virginia*, 33 WM. & MARY ENVTL. L. & POL'Y REV. 319, 338 (2008); *see also* Kirsten H. Engel, *The Dormant Commerce Clause Threat to Market-Based Environmental Regulation: The Case of Electricity Deregulation*, 26 ECOLOGY L.Q. 243, 316 (1999); Steven Ferrey, *Renewable Orphans: Adopting Legal Renewable Standards at the State Level*, ELECTRICITY J., Mar. 2006, at 52, 55–60; Patrick Jacobi, Note, *Renewable Portfolio Standard Generator Applicability Requirements: How States Can Stop Worrying and Learn To Love the Dormant Commerce Clause*, 30 VT. L. REV. 1079, 1096–1107 (2006).

[179] Erwin Chemerinsky et al., *California, Climate Change, and the Constitution*, 37 ENVTL. L. REP. 10,653, 10,654 (2007).

[180] *Id.* at 10,655.

[181] *Id.*

"race-to-the-bottom" because it can encourage neighboring jurisdictions to regulate less stringently.[182]

Leakage, however, also can be a problem for policies that do not attempt to eliminate social evils but instead seek to attract socially beneficial activities. In the case of renewable energy, if Missouri, for example, adopted an RPS but Tennessee, Arkansas, and Nebraska did not, the risk would be that Missouri's law would fail to change the market. The total amount of renewable generation might not increase—or would not increase as much as Missouri sought—because rather than building their own facilities, Missouri utilities would import power from existing generators in surrounding states.[183] This may well be some states' rationale for favoring in-state renewables, despite the constitutional problems of doing so.[184] A federal RPS, however, solves both problems. It removes the need—perceived or real—for state protectionism. And, as long as the standard is set high enough,[185] a federal RPS compels a total net increase in renewables.

The main rebuttal to these jurisdictional arguments is the claim that a federal requirement would intrude on state authority. To be sure, the "[n]eed for new power facilities, their economic feasibility, and rates and services, are areas that have been characteristically governed by the States."[186] It is, in fact, the structure the FPA ensures,[187] and on this basis, voices against a federal RPS have been loud indeed. Commenting on the proposed Energy Policy Act of 2005, the White House declared: "The Administration would oppose . . . a national renewable portfolio standard . . . and believes these standards are best left to the States. A national RPS could raise consumer costs, especially in areas where these resources are less abundant and harder to cultivate or distribute."[188] More recently, the National Association of Manufacturers and the electric utility industry's trade association, the Edison Electric Institute, issued a joint press release urging the same point. "[S]tates and their utilities—not the

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[182] *Compare* Kirsten H. Engel, *State Environmental Standard-Setting: Is There a "Race" and Is It "To the Bottom"?*, 48 HASTINGS L.J. 271, 278–85 (1997) (arguing that a race-to-the-bottom exists, resulting in reduction of state welfare and a need for federal regulation), *with* Richard L. Revesz, *The Race to the Bottom and Federal Environmental Regulation: A Response to Critics*, 82 MINN. L. REV. 535, 538–40 (1997) (challenging the race-to-the-bottom theory as a need for federal regulation).

[183] *See* J.R. DeShazo & Jody Freeman, *Timing and Form of Federal Regulation: The Case of Climate Change*, 155 U. PA. L. REV. 1499, 1532 (2007).

[184] Nathan E. Endrud, Note, *State Renewable Portfolio Standards: Their Continued Validity and Relevance in Light of the Dormant Commerce Clause, the Supremacy Clause, and Possible Federal Legislation*, 45 HARV. J. ON LEGIS. 259, 264–68 (2008).

[185] *See infra* note 285 and accompanying text.

[186] Pac. Gas & Electricity Co. v. State Energy Res. Conservation & Dev. Comm'n, 461 U.S. 190, 205 (1983).

[187] For a discussion on the FPA, see *supra* Part II.B.

[188] Statement of Administration Policy, Office of Mgmt. & Budget, Exec. Office of the President, H.R. 6—Energy Policy Act of 2005 (June 14, 2005), *available at* http://www.presidency.ucsb.edu/ws/index.php?pid=24834.

federal government—should be allowed to make their own fuel choices . . . . If ever there was a case in which one size doesn't fit all, this is it . . . ."[189] Members of Congress likewise have argued that a national RPS would be "in the spirit of an unfunded Federal mandate, the kind of thing that a lot of us were elected to stop, the idea of coming up with a big idea here in Washington and imposing it on the rest of the country."[190]

C. *Benefits and Costs*

Despite the breadth of contentions for and against a federal RPS, arguments over the proposal's likely benefits and costs have dominated the scene. Proponents insist a national RPS will deliver on all its environmental, economic, and security promises without deleterious price impacts. RPS opponents, on the other hand, contend that there are more effective ways to advance RPS goals, that its promises are empty, and that it will impose unnecessary, exorbitant price hikes on consumers. "It is hard to imagine any environmental policy," Professor Michaels contends, "that delivers as little in theory as a national RPS, [especially when] the experiences of the states show that it delivers equally little in practice as well."[191]

1. *Environmental*

Key among the federal RPS's offered benefits are its potential environmental effects. As Senator Jim Jeffords has argued, "A renewables requirement would dramatically reduce carbon emissions from powerplants. It would also significantly reduce emissions of sulfur and nitrogen oxides. These pollutants contaminate our water, cause smog and acid rain, and contribute to respiratory illnesses."[192] Other commentators are even more emphatic. "[A] national RPS would be designed primarily to correct market distortions."[193] It would eliminate the "environmental and social costs associated with the mining, processing, transportation, combustion and clean-up of fossil and nuclear fuels."[194] Water consumption should decrease,[195] as should overall pollution. "There is simply no logical way to crunch the numbers such that renewable generation induced by a national RPS would *not* decrease pollutants from

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[189] Press Release, Nat'l Ass'n of Mfrs. & Edison Elec. Inst., U.S. Manufacturers and Electric Companies Remain Firmly United Against Federal 'Renewable Portfolio Standard,' (Aug. 2, 2007), *available at* http://www.eei.org/newsroom/pressreleases/Press%20Releases/070802.pdf.

[190] 151 CONG. REC. S6676 (daily ed. June 16, 2005) (statement of Sen. Alexander).

[191] Michaels, *Politically Correct*, *supra* note 4, at 10.

[192] 151 CONG. REC. S6682 (daily ed. June 16, 2005) (statement of Sen. Jeffords).

[193] Christopher Cooper, *A National Renewable Portfolio Standard: Politically Correct or Just Plain Correct?*, ELECTRICITY J., June 2008, at 9, 10.

[194] Sovacool & Cooper, *Congress Got It Wrong*, *supra* note 135, at 127.

[195] *Id*. at 127–28.

levels they *would otherwise be* in the absence of renewables."[196]

Opponents of a federal RPS do not contend that the law will fail to yield environmental benefits. Rather, they argue that there are more efficient—and effective—ways of pursuing the goal. Professor Michaels has been most vocal on this front, though others also have sounded the alarm.[197]

Michaels claims that a national RPS will "reduce[] emissions at higher cost than necessary" for two reasons.[198] First, he argues that renewables will not create a "one-for-one" reduction in air pollution because renewable generation does not run as often as conventional facilities.[199] Utilities typically dispatch generation in "merit order," meaning that they run the least expensive generation first, taking into account operational considerations that may limit that preference.[200] Renewables thus are more likely to displace natural gas-fired generators than, say, coal plants, because natural gas facilities typically price higher in the generation stack than coal or nuclear.[201] Second, Michaels finds RPSs inefficient for failing to treat energy efficiency measures "symmetrically" with the addition of renewables.[202] Demand-side measures like efficiency improvements reduce just as much pollution as renewables but cost less because no new facility has to be built. Michaels thus sees RPSs' failure to promote efficiency as a key design flaw.[203]

The companion of these claims is the view that other tools can promote renewables better than an RPS. Here, the primary contender is the so-called "feed-in tariff," which numerous European and other nations have adopted.[204] The feed-in tariff is effectively the RPS's mirror image. Rather than using the stick of a minimum renewables threshold, the feed-in tariff employs the carrot of a guaranteed price and, often, a purchase

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[196] Christopher Cooper & Benjamin K. Sovacool, *All Flash, No Light: The Kabuki Dance Opposing a National Renewable Portfolio Standard*, ELECTRICITY J., Nov. 2008, at 41, 46.

[197] *See id*. at 46.

[198] Michaels, *Smart Policy*, *supra* note 147, at 81.

[199] *Id*. at 87. The percentage of time that a generation facility runs is referred to as the facility's "capacity factor." Most renewable resources, and especially solar and wind, have lower capacity factors than "baseload" facilities, such as nuclear and coal, that tend to run all the time because they are needed to meet minimum system demand. In 2007, the average capacity factor for nuclear plants was 91.8%; for coal, 73.6%; for natural gas combined cycle, 42%; for hydroelectric conventional, 36.3%; and for other renewables, 40%. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, ELECTRIC POWER ANNUAL 2008, at tbl.5.2 (2010), *available at* http://www.eia.doe.gov/cneaf/electricity/epa/epa.pdf.

[200] Paul L. Joskow & Roger G. Noll, *The Bell Doctrine: Applications in Telecommunications, Electricity, and Other Network Industries*, 51 STAN. L. REV. 1249, 1297 (1999).

[201] *See* Michaels, *Smart Policy*, *supra* note 147, at 86–87.

[202] *Id*. at 87.

[203] *Id*. at 84.

[204] *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, 73–74 ("As of January 2007, eighteen European Union countries, Brazil, Indonesia, Israel, South Korea, Nicaragua, Norway, Sri Lanka, Switzerland, and Turkey, along with several states and provinces, had adopted feed-in tariffs.").

obligation.[205] Under the former German program *Stromeinspeisungsgesetz*, for instance, renewable generators selling their power into the wholesale market were guaranteed a price of ninety percent of the retail rate.[206] This kind of price stability has given feed-in tariff advocates room to argue that these tools are more effective than RPSs in achieving renewables deployment because they eliminate investor risk.[207] "Because the [feed-in tariff] ties the payment to a particular project, the risk is removed for that project. Because the [RPS] ties the payment to an amount of generation, projects carry risks in terms of price, volume and market for all generators."[208]

2. *Security*

RPSs' asserted security benefits are twofold—one systematic, one sociopolitical. The potential systematic benefit is improved infrastructure reliability.[209] This may follow from the mere addition of renewables into the generation mix. By definition, a more diverse energy portfolio should be more reliable than a homogenous one because there are more, and different, resources to replace an offline generator.[210] Moreover, because of their smaller size, it should be easier to fill in for renewables generators

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[205] *See id*. at 73 ("[F]eed-in tariffs require utilities to provide renewable generators with a long-term fixed price for electricity . . . . Most feed-in tariffs also require utilities to interconnect all eligible renewable generation . . . .").

[206] *Id.* at 74. Germany has since changed the tariff so that it is fixed rather than tied to retail prices. The new program is the *Erneuerbare-Energien-Gesetz*. *Id*.

[207] *See, e.g.*, MARIO RAGWITZ ET AL., FRAUNHOFER INST. SYS. & INNOVATION RESEARCH, MONITORING AND EVALUATION OF POLICY INSTRUMENTS TO SUPPORT RENEWABLE ELECTRICITY IN EU MEMBER STATES 1 (2005), *available at* http://www.worldfuturecouncil.org/fileadmin/user_upload/Miguel/Ragwitz_monitor_pol_instr.pdf ("The effectiveness of the promotion of innovative technologies like wind energy, agricultural biogas and photovoltaics has been the highest in countries having feed-in tariffs as their main support system, even though not all feed-in countries are equally successful."); Paul Gipe, Renewable Energy Policy Mechanisms 56 (Feb. 17, 2006), *available at* http://www.worldfuturecouncil.org/fileadmin/user_upload/Miguel/Gipe_RE_Policy_Mechs.pdf ("Both Quota systems and Renewable Tariffs can be made to work effectively . . . . However, only Renewable Tariffs have a consistent record of offering equitable opportunity to all willing participants in the market while simultaneously stimulating rapid rates of growth in renewable generation.").

[208] C. Mitchell et al., Risk, Innovation and Market Rules: A Comparison of the Renewable Obligation in England and Wales and the Feed-In System in Germany 20, *available at* http://www.worldfuturecouncil.org/fileadmin/user_upload/Miguel/Bauknecht_Mitchell_Connor__2002__Risk__Innovation_and_Market_Rules_-_A_Comparison_of_the_RO_and_the_EEG.pdf; *see also* NICHOLAS STERN, STERN REVIEW: THE ECONOMICS OF CLIMATE CHANGE 417 (2006) ("Both sets of instruments have proved effective but existing experience favours price-based support mechanisms . . . . Central to this is the assurance of long-term price guarantees."); Janet L. Sawin, National Policy Instruments: Policy Lessons for the Advancement & Diffusion of Renewable Energy Technologies Around the World 27 (Int'l Conference for Renewable Energies Conference Thematic Background Paper, 2004), *available at* http://www.renewables2004.de/pdf/tbp/TBP03-policies.pdf.

[209] *See, e.g.*, Fershee, *supra* note 23, at 66–68; Maxted, *supra* note 178, at 337–38; Sovacool & Cooper, *Congress Got It Wrong*, *supra* note 135, at 112–18; *see also* 16 U.S.C. § 2621(d)(7) (2006) (discussing the statutory regulations that utility companies must follow).

[210] Sovacool & Cooper, *Green Means 'Go?'*, *supra* note 147, at 27; *see also* Sovacool & Cooper, *State Efforts*, *supra* note 118, at 6–7 (noting that renewables-based generators require less downtime for maintenance and repairs than conventional power plants).

that go offline. Then-Senator Barack Obama touted this attribute of renewables from a terrorism perspective: "Introducing renewable electricity . . . brings us a measure of physical security . . . [namely], smaller targets and reduc[ed] transport of combustible materials."[211]

The other oft-cited security benefit of renewables is in many ways the Holy Grail of American energy policy: energy independence. The idea is obvious. If we can use renewables to abandon fossil fuels, we can gain self-sufficiency rather than importing over a quarter of our national energy supply from politically unstable, oligopolist states.[212] It is the follow-through on this simple aim that has proven more problematic. Politicians have long touted energy independence as the rationale for a host of energy policies,[213] yet we remain woefully short of the target.[214] Now, with a proposed national RPS on the table, the rationale has reemerged. "[W]e are talking about whether we can get the United States to energy independence," then-Senator Ken Salazar implored, "whether we can set America free from being held hostage to the importation of foreign oil from Iran, Iraq, and Saudi Arabia . . . ."[215]

In response to these professed security advances, RPS naysayers point to practicalities. They argue that mass renewables deployment will make the electricity system less reliable, because more important than diversification is renewables' Achilles' heel—their "non-dispatchability." System operators cannot turn renewables-based generators on and off as they can with some fossil-fired units, because the sun, wind, and waters cannot be tamed.[216] This, they say, means less reliability, not more. They

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[211] 151 CONG. REC. S6671, S6690 (daily ed. June 16, 2005) (statement of Sen. Obama); *see also* AMORY B. LOVINS & L. HUNTER LOVINS, BRITTLE POWER: ENERGY STRATEGY FOR NATIONAL SECURITY 264–69, 284–89 (1982); Cooper, *supra* note 193, at 15 (arguing that renewables may help ease transmission siting); Alan Nogee et al., *The Projected Impacts of a National Renewable Portfolio Standard*, ELECTRICITY J., May 2007, at 33, 43; Sovacool & Cooper, *Green Means 'Go?'*, *supra* note 147, at 27 (contending that renewables benefit society by subjecting the utility industry to fewer "fuel interruptions and shortages").

[212] The Energy Information Administration estimates that in 2008 the United States consumed 99.481 quadrillion Btus of primary energy and had net imports of 25.936 quadrillion Btus. The vast majority of imports are oil, natural gas, and petroleum products. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, MONTHLY ENERGY REVIEW 3 tbl.1.1 (Mar. 2010), *available at* http://www.eia.doe.gov/emeu/mer/pdf/mer.pdf.

[213] *See, e.g.*, Davies, *Energy Policy*, *supra* note 106, at 78.

[214] For commentary on the idea of energy independence as impractical, unachievable, and inefficient, see, for instance, Richard J. Pierce, Jr., *Energy Independence and Global Warming*, 37 ENVTL. L. 595, 596 (2007); John J. Fialka, *Energy Independence: A Dry Hole?*, WALL ST. J., July 5, 2006, at A4; Tom Kenworthy, *Energy Independence May Be a Pipe Dream*, USA TODAY, Oct. 25, 2004, at 17A.

[215] 151 CONG. REC. S6671, S6684 (daily ed. June 16, 2005) (statement of Sen. Salazar); *see also* 153 CONG. REC. E1788 (daily ed. Sept. 4, 2007) (statement of Rep. Schakowsky); 153 CONG. REC. E311 (daily ed. Feb. 8, 2007) (statement of Rep. Udall); 153 CONG REC. S7680, S7689 (daily ed. June 14, 2007) (statement of Rep. Cantwell); 153 CONG. REC. S7582, S7597 (daily ed. June 13, 2007) (statement of Sen. Bingaman); Ralls, *supra* note 151, at 471.

[216] Steven Ferrey, *Restructuring a Green Grid: Legal Challenges To Accommodate New Renewable Energy Infrastructure*, 39 ENVTL. L. 977, 986–96 (2009); Jim Rossi, *The Trojan Horse of*

note that moving to renewables demands huge investments in a new transmission system, because areas where renewables are found are so disperse.[217] And, they contend that focusing on renewables as a cure to the United States' foreign oil addiction is myopic for failing to take advantage of other domestically available energy sources such as nuclear, coal, and Alaska oil, among others.[218]

3. *Economic*

Perhaps the most tested battleground over a national RPS's wisdom is its likely economic effects.[219] Both advocates and opponents come heavily armed to the debate. The result, a virtual cacophony of data: "[A] 15% [RPS] would save the residential, commercial, and industrial sectors $16.3 billion in electricity and natural gas costs."[220] But a national RPS would be "an $18 billion new tax on ratepayers to build tens of thousands of windmills and to spend $11 billion on solar power, which would produce one-fifth of 1% of all the electricity we need by 2025."[221] A 15% RPS, however, would "result in a savings in variable costs for electricity of $240 billion by 2026"—"far more than offsetting the $134 billion increase in capital expenditures" it would require.[222] Yet, it would increase "electricity prices by . . . $12.8 billion . . . by 2030,"[223] "rais[ing] our taxes, [raising] our electric rates, [running] away jobs, [and ruining] our mountaintops. That is not the kind of choice we like to have."[224]

The basis of RPS proponents' claims is that shifting to renewables can save money in a number of ways—namely, by lowering natural gas prices through reduced demand, by replacing conventional generation with renewable capital investments that are cheaper "over the expected lifetimes of the plants," and, eventually, by lowering renewable energy's own cost through technology advancement and economies of scale.[225] According to one study, these impacts, taken together, could lead to consumer savings of between $27 and $49.1 billion by 2020 under a 20% national RPS, and

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Electric Power Transmission Line Siting Authority, 39 ENVTL. L. 1015, 1041–42 (2009); *see also* Gunnar Birgisson & Erik Petersen, *Renewable Energy Development Incentives: Strengths, Weaknesses and the Interplay*, ELECTRICITY J., Apr. 2006, at 40, 42 (noting the nondispatchable nature of wind as an impediment to renewables development).

[217] Fershee, *supra* note 23, at 67–68; Michaels, *Politically Correct*, *supra* note 4, at 12; Robert J. Michaels, *Renewable Portfolio Standards: Still No Good Reasons*, ELECTRICITY J., Oct. 2008, at 18, 20; *see also* Ann E. Carlson, *Implementing Greenhouse Gas Emissions Caps: A Case Study of the Los Angeles Department of Water and Power*, 55 UCLA L. REV. 1479, 1493–94 (2008) (noting transmission development as a barrier to renewables).

[218] 151 CONG. REC. S6671, S6682 (daily ed. June 16, 2005) (statement of Sen. Domenici).

[219] Fershee, *supra* note 23, at 73.

[220] 153 CONG. REC. S7594 (daily ed. June 13, 2007) (statement of Sen. Reed).

[221] 151 CONG. REC. S6677 (daily ed. June 16, 2005) (statement of Sen. Alexander).

[222] 153 CONG. REC. S7598 (daily ed. June 13, 2007) (statement of Sen. Bingaman).

[223] 153 CONG. REC. S7611 (daily ed. June 13, 2007) (statement of Sen. Voinovich).

[224] 153 CONG. REC. S7506 (daily ed. June 12, 2007) (statement of Sen. Alexander).

[225] Nogee et al., *supra* note 211, at 38.

between $22.6 and $37.7 billion by 2025 under a 10% mandate.[226] This is on top of a projected net increase of 157,480 jobs under a 20% requirement, or 91,220 jobs under a 10% mandate.[227]

Others, however, take issue with these claims. They argue that the models used to estimate such economic paybacks are flawed, that they ignore the significant transmission costs of new renewables facilities, that using regulation to force on society technologies that cannot cut it on their own in the market is akin to "throwing away part of the labor force," and that the more likely outcome is not more jobs for America, but imported cheap labor from overseas.[228]

Ultimately, the problem with the assertions of both national RPS backers and dissenters is that they must rely on assumptions—projections and estimates, not actual evidence. "Since 1997, at least 18 studies have been completed on various [federal] RPS scenarios."[229] Not one, however, has been able to examine real world outcomes, a world in which a national RPS applies.

V. THE FEDERAL-STATE EVIDENCE (SO FAR)

Although the impact of a federal RPS remains academic, experience with state measures provides a hard, if partial, record on which to weigh the possibility of taking the RPS national. The record yields three key observations. State measures have in fact severely fragmented the renewables market by using widely differing eligibility criteria and, more problematically, limitations on RECs. State RPSs also erect geographically-based renewables trade barriers at an alarming rate. Finally, state RPSs have varied widely in both their delivered benefits and costs, and in their design.

In short, if a national RPS is well-designed,[230] it may have much to offer by eliminating the regulatory complexity the state-based regime has produced. Although many anti-federal RPS arguments focus on whether there should be RPSs at all, the reality is that most states already have such laws in place. As a practical matter, the real question thus becomes whether a new federal regime or the de facto state milieu will better carry out the RPS's objectives. A federal law would better advance the primary RPS goal of creating a robust, liquid market for renewables, and it may also better deliver the environmental, security, and economic benefits that RPSs potentially offer.

This Part assesses the record of state RPS performance thus far. It uses

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[226] *Id*. at 39.
[227] *Id*. at 42.
[228] *See, e.g.*, Michaels, *Politically Correct*, *supra* note 4, at 13–14, 16–18.
[229] Nogee et al., *supra* note 211, at 35.
[230] *See infra* note 285 and accompanying text.

a trio of tools, one existing and two new, to do so. The new tools are a thirty-six-jurisdiction survey of state RPSs that was performed for this Article[231] and the application of a four-dimensional original metric for measuring RPS design. The metric works by taking each of the RPS design attributes delineated above[232] and scoring the attributes on a scale of 0 to 5. Blended in with these two new methodologies is the existing tool, available data on state RPS effects.

A. *Renewable Energy Markets*

States generally agree that most of what might be called the "core" renewable resources count toward their RPSs. Thus, all thirty-six states surveyed give credit for wind, biomass, methane, and photovoltaic solar generators, and virtually all—thirty-five of thirty-six—give credit for thermal solar generation. After that, however, uniformity withers. Only twenty-nine states count geothermal as a qualifying renewable resource, only twenty-three accept ocean and tidal energy, and a mere thirteen count renewables-based cogeneration.[233] In other words, although the existing state-based RPS regime creates common ground for many renewables, it also clearly advantages some technologies over others—ensuring that there is no single "renewable product" across state lines.

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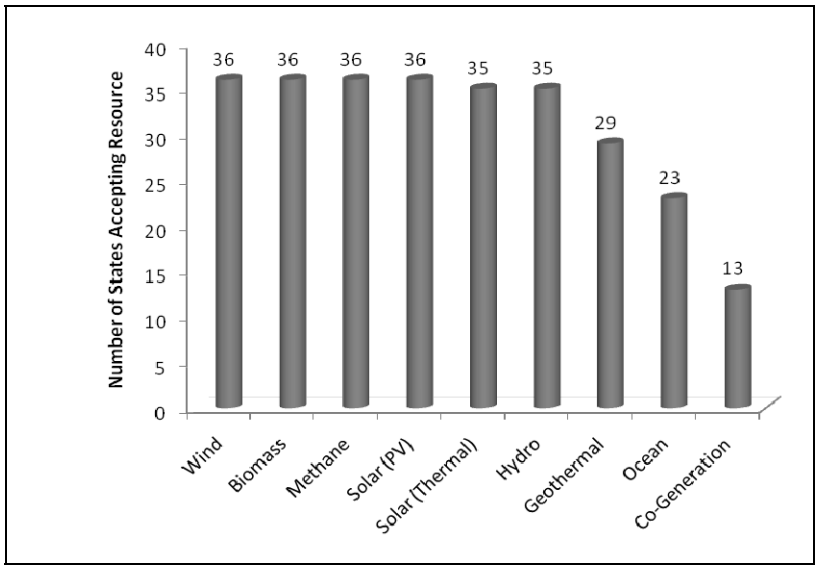
[231] The survey reviewed state RPS statutes and, in some cases, implementing regulations. It is current through October 2009. The Appendices summarize the survey; the full data are on file with author.

[232] *See supra* Part II.B.

[233] *See infra* Appendix A. Treatment of cogenerators is difficult. Cogeneration admittedly is an efficiency, rather than renewable, technology. It is included as a measure of market definition because a number of states specifically contemplate that renewables may be co-fired with other materials, often in cogeneration facilities. Nevertheless, because cogeneration is primarily an efficiency technology, the efficacy tendency scoring metric also takes RPSs' inclusion of cogeneration into account in measuring salience distortion. *See infra* Appendix F.

Figure 1: Qualifying Renewables by Number of States



This lack of uniformity becomes even more apparent when states' treatment of specific resources is considered. A number of states—no less than sixteen—give "credit multipliers" to certain renewables, thus preferencing those resources over others.[234] The rationale for this approach is to help spark the chosen technologies' development.[235] Whether such an approach is justified, however, is immaterial to the key federal-state question: product uniformity. Thus, when Virginia, for instance, gives "double" the normal RPS credit for solar and wind facilities, those resources suddenly assume enhanced value, and an uneven playing field emerges.[236] Indeed, many of these credit multipliers are significant. Colorado gives triple credit for solar energy, Delaware allows a 350% credit for off-shore wind, Utah affords a 240% multiplier for in-state solar facilities, and Arizona offers multiple bonuses that can be added up to double credit based on facility installation date and type.[237]

A similar phenomenon has developed with respect to hydroelectricity. Every RPS state counts hydroelectric power, but the restrictions and limitations on this resource are so varied that there simply is no uniform "RPS-eligible" hydroelectric product. Arizona requires post-2005 facilities to be 10 MW or less.[238] California allows facilities under 30 MW that do

[234] *See infra* Appendix B.
[235] Rickerson et al., *supra* note 204, at 82.
[236] VA. CODE ANN. § 56-585.2(C) (2007).
[237] *See infra* Appendix B.
[238] ARIZ. ADMIN. CODE §§ R14-2-1802(A)(4)(a)–(b), (9)(a)–(c) (2008).

not impact "instream beneficial use."[239] Maine credits facilities under 100 MW.[240] And so on.

Nor has the state RPS regime created a uniform renewable energy credit scheme. Rather, although virtually all state RPSs provide for REC use, their implementation varies even more widely than their definitions of "renewable."[241] This is important because RECs are what can make the renewables market most functional. Their very purpose is to enhance efficiency by (1) creating a larger, more liquid market and (2) giving electricity providers greater options for compliance. However, while many states specify that one REC equals one MWh of renewables-generated electricity,[242] at least three define an REC as one kilowatt-hour of electricity.[243] This is akin to saying that a dime found in Arizona can be exchanged for $100 in Texas.[244] Making matters worse, states give their RECs different shelf lives.[245] Some states, like Arizona, put no expiration date on their RECs. Others, like Colorado, give them somewhat longer shelf lives, five years for instance. In between, the array of choices is wide.[246] Add the fact that what qualifies as "renewable" in the first place already varies, and that different regions have begun developing different REC-tracking platforms,[247] and the lack of uniformity across jurisdictions becomes readily obvious.

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[239] CAL. PUB. UTIL. CODE § 399.12(c)(1)(A)–(B) (West 2010).

[240] ME. REV. STAT. ANN. tit. 35-A § 3210(2)(C)(2)(f) (2009).

[241] Hawaii's statute does not utilize RECs, for perhaps obvious reasons. New York currently does not allow credit use, and Iowa's law merely authorizes state regulators to "establish or participate" in an REC program. *See* IOWA CODE § 476.44a (2008); N.Y. Pub. Serv. Comm'n, Order Establishing New RPS Goal and Resolving Main Tier Issues, Case 03-E-0188, at 24 (Jan. 8, 2010), *available at* http://documents.dps.state.ny.us/public/Common/ViewDoc.aspx?DocRefId={30CFE590-E7E1-473B-A648-450A39E80F48}.

[242] *E.g.*, 723-3 COLO. CODE REGS. § 3652(n) (2007); DEL. CODE ANN. tit. 26, § 352(16) (2009).

[243] ARIZ. ADMIN. CODE § R14-2-1803(A) (2008); NEV. REV. STAT. § 704.78215(1) (2009); N.M. STAT. § 62-16-5(A) (2009).

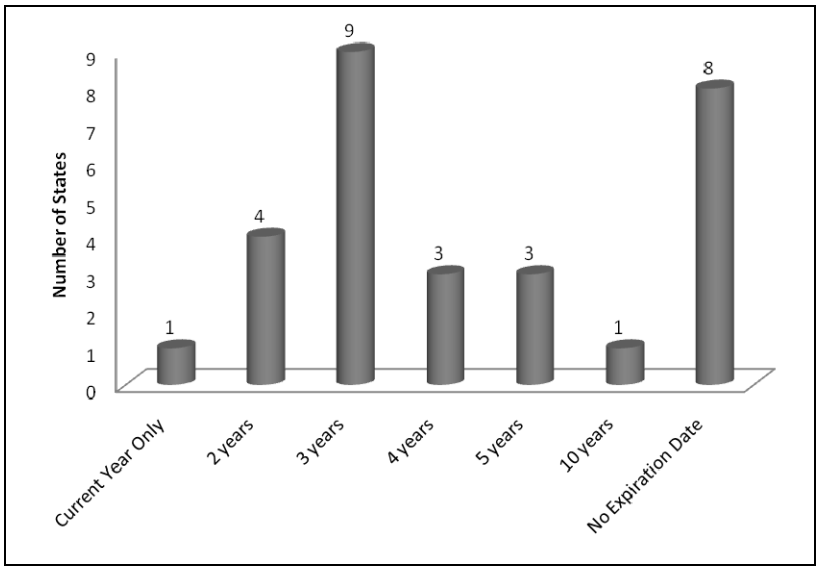
[244] Obviously, a kind of "exchange rate" system could easily solve such a problem. That the problem exists, however, underscores the effect that different RPS requirements have on a uniform REC market.

[245] Cory & Swezey, *supra* note 113, at 23.

[246] *See infra* Appendix C. Some statutory RPSs do not specify shelf lives for RECs; some also leave it to the discretion of the implementing agency. The Michigan PSC, for instance, has proposed a three-year shelf life for RECs in that state, but that rulemaking remains open as this Article goes to press. *See In re* Rules Governing Renewable Energy Plans and Energy Optimization Plans, 2010 WL 1820876 (Mich. Pub. Serv. Comm'n Apr. 27, 2010) (proposing Rule 460.224, which would mandate that RECs "shall not be available for compliance retirement for any month later than 36 months after the month in which the credits were generated"). Figure 2 excludes such states.

[247] *See* Fershee, *supra* note 23, at 69–70 (discussing ISO and RTO tracking systems for RECs); *see also* Lori Bird & Elizabeth Lokey, *Interaction of Compliance and Voluntary Renewable Energy Markets*, ELECTRICITY J., Jan.–Feb. 2008, at 18, 20–21.

Figure 2: REC Shelf Lives by Number of States



Indeed, one recent study concluded that state RPSs have "fragmented" the REC market.[248] REC prices vary "substantially across regions and resource types" because of differing "resource eligibility rules," supply perceptions, "and/or hoarding of [credits] by some parties."[249] A national RPS should ameliorate these effects. A uniform REC market would replace the fractured one that exists today. Then, when one area lacked sufficient renewable energy at any given time, it could purchase available credits from another.[250] In other words, a more economically efficient equilibrium should occur. Federal competition should not just make REC prices more uniform; it should drive them down.[251]

B. *Jurisdiction*

The evidence weighs even more clearly in favor of a national RPS from a jurisdictional perspective. State RPSs include a surprising number of geographic limits on eligible generation. More than three-quarters of RPS states impose some kind of geographic limitation on generation eligibility: thirty-one of the thirty-six RPS states, or eighty-six percent.

To be fair, not all of these restrictions are equally onerous. Some

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[248] *See* WISER & BARBOSE, *supra* note 114, at 26.

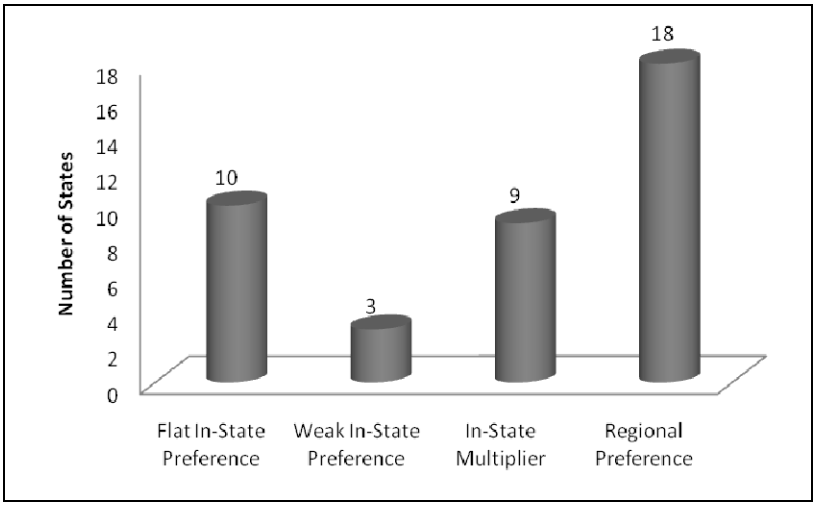
[249] *Id*. at 27–28.

[250] *See* Sovacool & Cooper, *Congress Got It Wrong*, *supra* note 135, at 107.

[251] *See* Pallab Mozumder & Achla Marathe, *Gains from an Integrated Market for Tradable Renewable Energy Credits*, 49 ECOLOGICAL ECON. 259, 270 (2004).

confine eligible power sources only to the state's region, obviously much less troublesome than a limit that cuts eligibility off at the state border.[252] A number of states, such as Ohio and Illinois, impose a flat preference for in-state power, while others, such as Minnesota and New Mexico, take a weaker approach, merely encouraging RPS implementation with an eye toward state-centered benefits.[253] Still others take a less direct approach that has the same practical effect as a flat preference: awarding credit multipliers to facilities, or certain facility classes, located in-state.[254] No matter which way states structure their preferences, however, the outcome is the same. RPSs that favor in-state or in-region generation splinter the market and stunt trade. They limit renewables' overall value by making them worth less in one jurisdiction than another, and they diminish the national commitment to renewables by curbing their trade.

Figure 3: Geographic Limits on RPS-Eligible Power



The effect of these geographic limits is amplified by their application to RECs as well. At least eighteen states do this, with ten restraining REC use or eligibility by their local region, and eight more either giving extra weight to RECs derived from in-state power or restricting REC use to their states' boundaries.[255] But limiting where RECs can be used risks gutting

[252] Endrud, *supra* note 184, at 272–73.

[253] *See infra* Appendix D.

[254] *See id*.

[255] States that limit or modify REC value by region include California, Connecticut, Maryland, Massachusetts, New Hampshire, New Jersey, Oregon, Pennsylvania, and Rhode Island, as well as the District of Columbia. *See* CAL. PUB. UTIL. CODE § 399.12(c), (f) (West 2010); CAL. PUB. RES. CODE § 25741(b) (West 2010); CONN. GEN. STAT. § 16-245a(b) (2009); D.C. CODE ANN. §§ 34-1431(10), 34-

the mechanism's very purpose: to harness the market to make RPSs more efficient, not less.

Indeed, virtually every state that imposes geographic limits on RPS qualification has potential trading partners in its immediate neighbors. Yet, quite troublingly, these states have erected geographic barriers nevertheless. All but one state with an in-state preference—Delaware—border a non-RPS state. And all but three of these states border two or more non-RPS states.[256] This implies that state RPSs' geographic limits likely restrain trade, because without those limits, developers might find it more cost-efficient to build a facility, for instance, just inside Wyoming's non-RPS border and transmit the power into the Colorado RPS market.[257] Thus, states' geographic restrictions put their RPSs at war with themselves. By seeking to prevent leakage on their percentage targets, they undermine the very markets they seek to build.

1432 (2010); MD. CODE ANN., PUB. UTIL. COS. §§ 7-701(i), 7-703(d) (LexisNexis 2010); 225 MASS. CODE REGS. 14.07(2)(c) (2010); N.H. REV. STAT. ANN. § 362-F:6(IV) (2010); N.J. ADMIN. CODE §§ 14:8-2.8(c), 14:8-2.9 (2010); OR. REV. STAT. § 469A.145 (2010); 73 PA. CONS. STAT. §§ 1648.3(e), 1648.4 (West 2010); R.I. GEN. LAWS § 39-26-4(d) (2010). States that do so on the basis of the REC's production in-state include Arizona, Delaware, Michigan, New Mexico, North Carolina, Rhode Island, Utah, and West Virginia. *See* ARIZ. ADMIN. CODE § R14-2-1806(D)–(E) (2008); DEL. CODE ANN. tit. 26, § 356 (2010); MICH. COMP. LAWS ANN. § 460.1039(2)(d)–(e) (West 2010); N.M. ADMIN. CODE § 17.9.572.13(C)(2) (2010); N.C. GEN. STAT. § 62-133.8 (2010); R.I. GEN. LAWS § 39-26-5(c) (2010); UTAH CODE ANN. § 54-17-603(6)(a) (2010); W. VA. CODE ANN. § 24-2F-4(b)(3) (LexisNexis 2010).

[256] *Compare* DSIRE: Database of State Incentives for Renewables & Efficiency, Renewable Portfolio Standards (Feb. 2010), *available at* http://www.dsireusa.org/documents/SummaryMaps/RPS_map.ppt, *with* National Public Radio, Visualizing the U.S. Electric Grid, http://www.npr.org/templates/story/story.php?storyId=110997398 (last visited June 17, 2010) (visually comparing states that have RPSs with transmission lines). A more sophisticated assessment of these geographic barriers' effect on REC trading is an area for further study. Examining transmission paths—and available transmission capacity—would be a necessary part of such an undertaking. Here, a more simplified approach of geographic boundaries, rather than transmission interconnections, was used. In this tally, states with voluntary RPSs were counted as "non-RPS" states for leakage purposes, because a state with a non-binding goal presumably should be comparably more willing to trade power into a state with a mandatory RPS. Such states, however, are also counted as "RPS states" for purposes of counting those states with geographic restraints on trade, because their non-binding RPSs should create at least some pull on renewable-based power into their borders.

[257] Wyoming does not currently have an RPS, and Colorado grants 1.25 RECs (rather than 1 REC) for energy generated in-state. COLO. REV. STAT. § 40-2-124(c)(III) (2009); *see also* DSIRE: Database of State Incentives for Renewables & Efficiency, Renewable Portfolio Standards (June 2010), *available at* http://www.dsireusa.org/documents/summarymaps/RPS_map.pptx. "Likely" is intentional here, because the mere fact that a transmission line runs into a state says nothing about whether there is available capacity on the path, or if there is energy available for purchase on the other end. At the same time, referencing only immediately neighboring states is conservative because power also could be acquired from a non-RPS state located many states away, and neither Canada nor Mexico are accounted for here even though they have interconnections with portions of the United States grid.

Table 1: Number of Non-RPS States Bordering RPS Jurisdictions with In-State Preferences

State with In-State RPS Preference	*Neighboring Non-RPS / Voluntary RPS States*
Delaware	0
Arizona, Massachusetts, Michigan, New Hampshire	1
Illinois, Iowa, Kansas, Maryland, Minnesota, New Mexico, Utah, West Virginia	2
Ohio, Texas	3
Colorado, Missouri, North Carolina	4

C. *Benefits and Costs*

The debate over a federal RPS's likely benefits and costs is perhaps most remarkable for its focus. It is much less about whether a national RPS will deliver renewables' benefits better than the existing array of state laws than it is about whether there should be renewables-promoting laws at all. This is particularly true on the environmental front, where RPS opponents concentrate on the laws' efficiency rather than their efficacy.[258] Still the question remains: Do RPSs really provide the benefits they promise?

On this count, the jury remains out. Because state RPSs are so young, the majority of studies examining their (likely) impacts are prospective.[259] Even if experience were longer, however, teasing out precise macro-social and -economic effects of any law, particularly one that seeks to reinvent

[258] *See, e.g.*, Michaels, *Smart Policy*, *supra* note 147, at 84–88 (providing an overview of efficient environmental regulation). One recent study found that, fifteen years after inception, a single state's RPS would save over 145,000 tons per year in SO_x emissions, 71,000 tons per year in NO_x emissions, and over 31 million tons per year in CO_2 emissions. ATHANASIOS D. BOURNAKIS ET AL., THE ECONOMIC AND ENVIRONMENTAL IMPACTS OF CLEAN ENERGY DEVELOPMENT IN ILLINOIS 65–67 (2005), *available at* http://www.erc.uic.edu/PDF/Clean_Energy_Development.pdf. Some commentators, however, have suggested that renewables' environmental profits are over-assumed because increased renewables use simply may "put downward pressure on the cost of compliance with the environmental regulations" rather than "reduc[ing] aggregate emissions." CLIFF CHEN ET AL., WEIGHING THE COSTS AND BENEFITS OF STATE RENEWABLES PORTFOLIO STANDARDS: A COMPARATIVE ANALYSIS OF STATE-LEVEL POLICY IMPACT PROJECTIONS 31 n.56 (2007), *available at* http://eetd.lbl.gov/EA/EMS/reports/61580.pdf.

[259] For a survey of state studies, see CHEN ET AL., *supra* note 258, at i–viii. For an assessment of a twenty percent federal mandate, see generally Andy S. Kydes, *Impacts of a Renewable Portfolio Generation Standard on US Energy Markets*, 35 ENERGY POL'Y 809 (2007), and see also Nogee et al., *supra* note 211, at 33.

something as fundamental as our energy infrastructure, is "difficult if not intractable."[260] Moreover, studies that have tried to extrapolate from states' experience to a possible federal one have varied widely in their results. As one commentator aptly summarized, "[t]he outcomes of the currently available studies are so broad that the results seem to add little more than quantified speculations . . . . [Their] results indicate that the impact of a national RPS could be revolutionary or exceedingly moderate."[261]

Some studies have taken a more retrospective look at the state experience. A 2008 analysis by the Lawrence Berkeley National Laboratory concluded that state RPSs are "[i]ncreasingly [m]otivating [r]enewable [e]nergy [d]evelopment," with sixty percent of non-hydroelectric generation additions since 2002 occurring in RPS states, and that figure rising to seventy-six percent for 2007.[262] Such a finding speaks not only to RPSs' ability to deliver on their core deployment objective but also to their likely national security impacts. In the long view, any use of the national electric system to shift away from foreign oil must, in all likelihood, rely on both increasing renewable electricity consumption and a transition to electricity-based vehicles.[263] Deploying additional renewables now advances the first of these factors. Further, in the shorter term, increased renewables use should help national security in a different way by making fuel supplies less volatile. Research increasingly points to supply volatility, rather than unavailability alone, as associated with the economic risks of energy dependence.[264] Increased renewables use should help on this front because their availability relies on natural rather than economic cycles, thus providing a kind of "'societal insurance' against high fossil prices" during economic downturns.[265]

Nevertheless, the extent to which RPSs have provided these security benefits by diversifying the generation fleet are underwhelming, at least so far. Certainly some of this is because RPSs are relatively new; some of it

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[260] Kydes, *supra* note 259, at 814.

[261] Fershee, *supra* note 23, at 66.

[262] WISER & BARBOSE, *supra* note 114, at 12.

[263] *Cf.* U.S. GOV'T ACCOUNTABILITY OFFICE, FEDERAL ENERGY AND FLEET MANAGEMENT: PLUG-IN VEHICLES OFFER POTENTIAL BENEFITS, BUT HIGH COSTS AND LIMITED INFORMATION COULD HINDER INTEGRATION INTO THE FEDERAL FLEET 13–16 (2009), *available at* http://www.gao.gov/new.items/d09493.pdf (noting the importance of moving to electric vehicles in order to reduce reliance upon oil); Martin LaMonica, *Electric Cars Seen as Killer App for Smart Grid*, CNET NEWS, June 20, 2009, http://news.cnet.com/8301-11128_3-10269723-54.html (noting that electric cars can reduce costs and "allow power generators to take better advantage of wind and solar power"). Electricity comprises roughly forty percent of the nation's energy consumption, and seventy-one percent of our petroleum use is in transportation. EIA, ANNUAL ENERGY REVIEW, *supra* note 22, at 37.

[264] *See generally* Shimon Awerbuch, *Determining the Real Cost: Why Renewable Power Is More Cost-Competitive Than Previously Believed*, RENEWABLE ENERGY WORLD, Mar.–Apr. 2003, at 53 (noting that "price volatility may well have more profound effects on economic well-being than temporary supply disruptions").

[265] *Id*. at 3.

also must be attributed to certain states' lagging compliance rates.[266] More of it, however, may have to do with renewables' relative costs. Virtually all of the new renewables capacity spurred on by RPSs—ninety-three percent—has come from wind additions,[267] no doubt because wind continues to offer one of the lowest prices among renewables.[268] True, adding wind provides fuel diversification itself. But without greater inroads from other resources, the national generation profile retains far more of its existing shape than one revolutionized by the rise of solar, biomass, tidal, or other alternative energies.

State RPSs' economic effects appear similarly moderate. Although virtually every state that has studied the issue has predicted added jobs and industrial output from RPS enactments,[269] research on state RPSs' actual empirics has focused on price impacts. Those data show three trends. First, state RPSs so far have not delivered the price decreases some analysts have projected for a federal measure. Second, state RPSs have increased retail prices, but those increases generally have been small. Third, these price impacts have varied rather substantially by state. For instance, a 2009 analysis by Wolf and Taran compared twelve RPS states' retail prices with those of twenty-eight non-RPS states. The study concluded that state RPSs caused "small" price increases—an average of two cents per kilowatt-hour—but the "variability in prices among states [was] far greater" than the average.[270] The Lawrence Berkeley study reached a comparable result. Estimating 2007 price impacts in twelve RPS jurisdictions, the study found that state RPSs have caused price increases of barely 0.1% (Maryland) to just over 1% (Connecticut and Massachusetts).[271]

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[266] *See* WISER & BARBOSE, *supra* note 114, at 12, 21 (noting "limited" operational experience with RPSs and compliance problems in Arizona, Connecticut, Massachusetts, Minnesota, Nevada, and New York).

[267] *Id*. at 13.

[268] *See, e.g.*, Frank Harris & Peter Navarro, *Promoting Wind Energy Development in an Era of Restructuring*, ELECTRICITY J., Jan.–Feb. 2000, at 34, 34 (noting that wind power "ranks second only to hydroelectricity as the cheapest source of renewable electricity generation").

[269] CHEN ET AL., *supra* note 258, at 24.

[270] Christian Wolf & Zinaida Taran, *The Impact of Renewable Portfolio Standards on Electricity Prices in the USA*, *in* 2009 EABR & TLC CONFERENCE PROCEEDINGS 1, 4–5 (on file with author). In 2008, the average price of residential retail electricity in the United States was 11.36 cents/kilowatt-hour. EIA, ANNUAL ENERGY REVIEW, *supra* note 22, at 261.

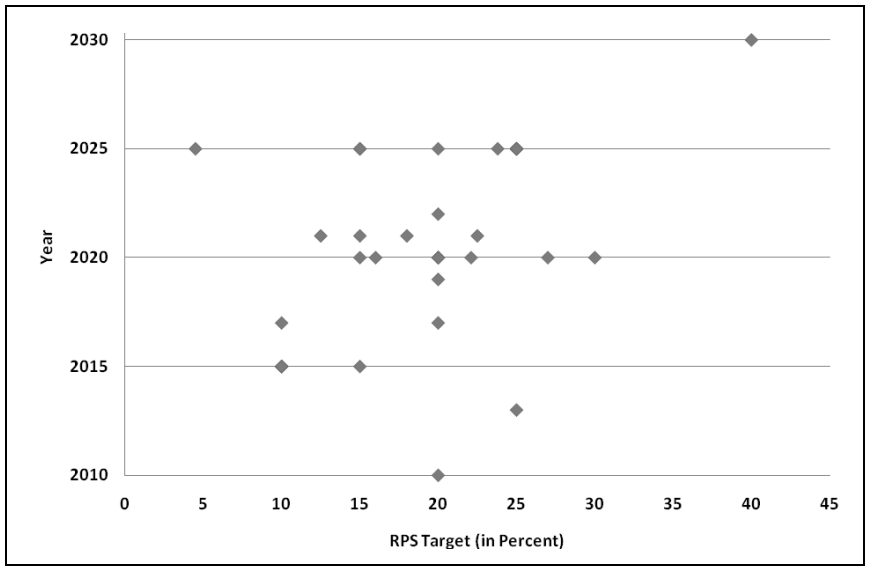
[271] WISER & BARBOSE, *supra* note 114, at 29. This observed trend is largely consistent with what many economists expect. *See* Ryan Wiser et al., *The Experience with Renewable Portfolio Standards in the United States*, ELECTRICITY J., May 2007, at 8, 17 (surveying price impact projections ranging from roughly -6% to +9%, with a median of 0.7%).

D. *Power Forward?: Environmental Electricity, Efficacy Tendency, and Policy Difference*

This divergence in state RPS performance—from ranging renewables deployment to differing cost impacts—underscores the market fragmentation that state law's dominance has engendered. But this should not be surprising. State RPSs do not just vary in how their eligibility rules and credit mechanisms define "renewable." They also differ remarkably in their policy designs.

A simple dataset makes the point. Plot the various state RPS targets and target dates against each other, and no obvious pattern emerges. Rather, as Figure 4 shows, the trend is one of difference, not uniformity. State targets range from less than five percent of retail sales to thirty percent. Dates for compliance also are not uniform; they range from 2010 to 2030. And just because a state has a lower target does not mean that it will have an earlier compliance date, nor are later compliance dates necessarily correlated with higher targets. All manner of combinations exist.

Figure 4: Variation in State RPS Target Percentages and Dates[272]



[272] Iowa, which has an RPS that is less than one percent of its demand, is not included in Figure 4. Where states employ more than one RPS requirement—different percentages by energy "tier" or for different electricity provider status (investor-owned utility, cooperative, municipality, for instance)—Figure 4 employs the higher requirement. Figure 4 masks some similarities among RPSs because states with identical targets and target years appear as a single datapoint.

Examining other RPS design criteria further emphasizes this trend of difference. Take two questions: (1) Is an RPS mandatory or voluntary?, and (2) Does it apply to all of the jurisdiction's electricity providers or only some? In neither case is there uniformity among state laws. Rather, the two trends are reverse images of each other. Most state RPSs are mandatory, but most do not apply to all electricity providers in their jurisdictions. In fact, thirty-one states impose mandatory targets, while only five are voluntary. In contrast, only less than half of state RPSs apply to all electricity providers, while twenty do not.

The difference in state RPS policies becomes even more apparent when a systematic metric of RPS design is applied. This might be referred to as the law's "efficacy tendency." To calculate the efficacy tendency of any given RPS, the four RPS design attributes delineated above—the law's aspirational aggressiveness, its salience distortion, its market definition, and its planning and enforcement rigor—can be assessed and scored on a scale of 0 to 5. These four scores are then combined to reach a cumulative efficacy tendency ranking. A ranking of 20 means the law should tend to be more effective than lower ranked laws. A ranking closer to 0 means the law should tend to be less effective than higher ranked laws. Thus, the most aggressive law with little salience distortion, a broad market definition, and strong planning and enforcement mechanisms should receive scores of 5 in each category, for a composite ranking of 20. A weak law with great salience distortion, a narrow market definition, and anemic planning and enforcement mechanisms should receive lower scores, for a composite toward 0.

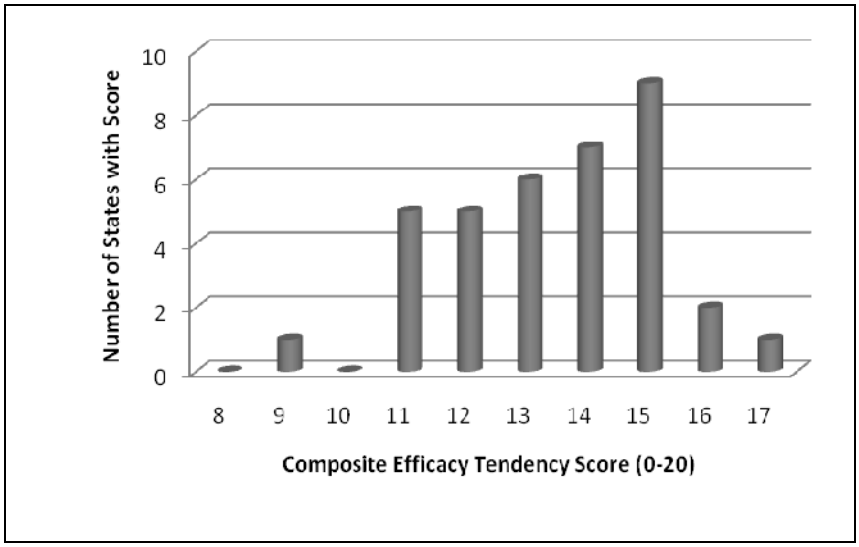
For present purposes, most central is not the relative strength of state RPSs, but rather, the similarity or difference in their rankings. Using the above methodology, efficacy tendencies were calculated for each of the thirty-six surveyed laws. The results demonstrate just how divergent state RPS designs are.[273] As shown in Figure 5, the laws' composite scores vary substantially. For instance, North Dakota received a relatively low composite score of 10.5, in part because its RPS is voluntary, it accordingly has no enforcement penalties, and its target is only ten percent.[274] By contrast, Washington received a higher score of 14.5, in part because its law is mandatory, it does not exclude renewable resources, and

[273] States' efficacy tendency scores are reproduced in Appendix E. The scoring criteria used are reproduced in Appendix F. The efficacy tendency calculations presented here represent a preliminary—and admittedly imperfect—estimation of different RPSs' relative strengths. The metric is useful as a uniform measuring stick, against which state RPSs can be compared. A more accurate efficacy tendency metric, however, would attempt to estimate more directly how much a given RPS should spur on renewables development. For instance, the law's mandatoriness might be separately scored from its aggressiveness, and its aggressiveness might be expressed as a mathematical function of (a) its target; (b) its salience distortion; and (c) the state's current level of renewables use. Further scholarship on this front may be warranted.

[274] *See* S.D. CODIFIED LAWS § 49-34A-101 (2009).

it includes both enforcement penalties and advance planning requirements.[275] In short, Figure 5 confirms that some states have what we should expect to be rather strong RPSs, but many other states have much weaker laws. In fact, the state that ranks lowest on the efficacy tendency scale, Iowa, has a score, 8.5, that is barely half of the highest ranked state, California's composite of 16.75. States also are distributed widely across this range. A full third of state efficacy tendency scores—twelve state scores—place one or more standard deviations from the median of 13.6.[276]

Figure 5: Variation in State RPS Composite Design Strength[277]



State RPSs range even more widely in their individual design traits. Existing laws seem strongest in their aspirational aggressiveness and lack of salience distortion. The mean scores for these traits are 4.0 and 3.4, respectively.[278] States seem weaker in defining the renewable market broadly, and even more so in their planning and enforcement mechanisms. The respective means for these traits are 3.1 and 2.8. These scores are not surprising given the Lawrence Berkeley Laboratory's finding that state RPSs appear to be fragmenting the renewables market.[279] One would

[275] *See* WASH REV. CODE § 19.285.040(2)(a)(i)–(iii) (2010) (making targets mandatory); *id.* § 19.285.030(18) (2010) (defining "renewable resource"); *id.* § 19.285.060(1) (2010) (providing for a penalty or noncompliance); WASH. ADMIN. CODE § 480-190-040(1) (2010) (providing for annual reporting requirements).

[276] The mean for the composite scores is 13.3, the variance is 3.2, and the standard deviation is 1.8.

[277] For graphing purposes, composite scores are rounded up.

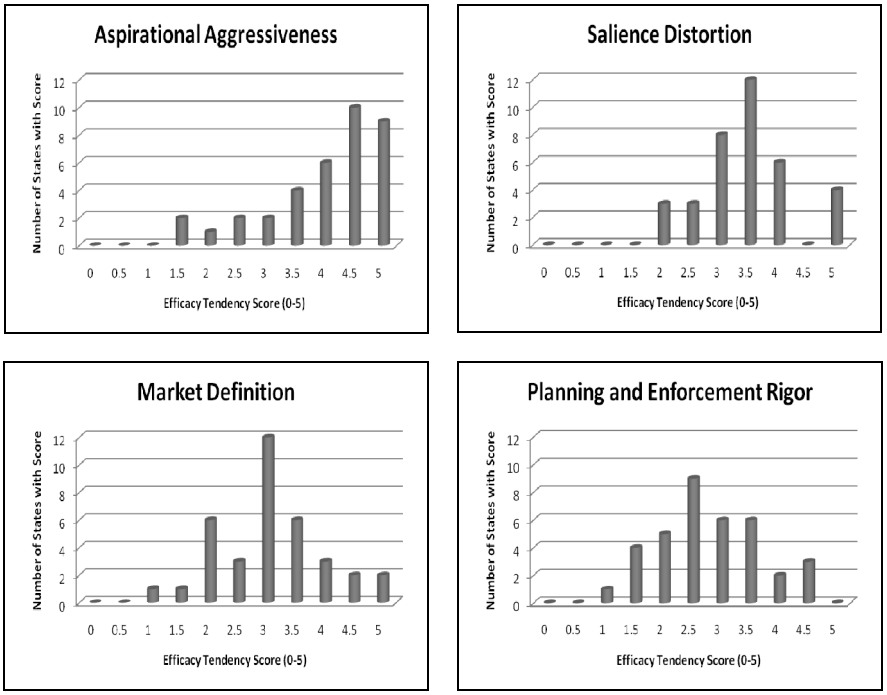
[278] The median for aspirational aggressiveness is 4.5. It is 3.5 for salience distortion.

[279] *See* WISER & BARBOSE, *supra* note 114, at 26.

expect a fragmented market to have a lower market definition score, with comparatively higher variation than other design traits.

Indeed, state RPSs appear quite divergent in their market design. States' market definition scores range between 1 and 5, for a spread of 4. States' aspirational aggressiveness and planning and enforcement rigor scores each have a range of 3.5, from 1.5 to 5 and from 1 to 4.5, respectively, but a lower range for salience distortion. That trait's range is 3: from a low of 2 to a high of 5. This implies that states are more varied in the ways they define their RPS markets than how aggressive they are in setting their RPS goals. A look at the distribution of the traits' scores, shown in Figure 6, confirms this. The only distribution that is at all "clumped"—implying less variance in state RPS design—is that of salience distortion. The remaining distributions, including that for market definition, are well spread across a wider range, a fact confirmed by the distributions' statistical variance.[280]

Figure 6: Variation in State RPS Design Traits



[280] The traits' statistical variances are 0.6 for salience distortion, but 1.0, 0.9, and 0.8 for the other three categories, respectively.

Most important, however, no state is the same. For example, a state that scores high in its aspirational aggressiveness might score just as low in its planning and enforcement rigor—and vice versa. Contrast, for instance, Connecticut and Michigan. These two states received identical composite scores of 13, but how they got there differed greatly. Connecticut had a "perfect" score of 5 for its aspirational aggressiveness but only a 2.5 for its market definition. Michigan, on the other hand, earned a 3.5 for its aspirational aggressiveness and a 3 for its market definition; it was higher, at a score of 4.5, on its planning and enforcement rigor than was Connecticut, which earned a 2. The point is plain. State design of RPSs differs greatly, not just in general, but within and among attributes as well.

All of this is critical because of the mixed message it sends the market. It tells investors that renewables have different values in different jurisdictions; it makes the assessment of where and whether to build more complex; and it introduces uncertainty precisely because the cumulative RPS regime is so complex, and because there are so many parts to it that can change.[281]

The stark variation in RPS policy designs is also important, however, for what it says on the federal-state RPS debate. Good policy design does not simply advance a law's primary goal. It will also maximize any other benefits and minimize any other costs the law might impose.[282] What the variation in state RPS design may mean, then, is that there is further reason to move to a federal law. Certainly, RPS design alone cannot account for states' successes and failures. Many other factors impact how well an RPS performs—from the overall retail market structure to financial community expectations.[283] But it is also true that any RPS's success depends heavily on its "implementation specifics."[284] Accordingly, from a benefits-costs perspective, a federal RPS holds the power, potentially at least, to offer something a state regime cannot: If designed well,[285] a federal RPS has the

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[281] *See* Cory & Swezey, *supra* note 113, at 29; Fershee, *supra* note 23, at 66–68.

[282] Steve P. Calandrillo, *Responsible Regulation: A Sensible Cost-Benefit, Risk Versus Risk Approach to Federal Health and Safety Regulation*, 81 B.U. L. REV. 957, 961 (2001).

[283] *See* Cory & Swezey, *supra* note 113, at 29–30.

[284] *Id*. at 27.

[285] The question of how a federal RPS would be designed is critical. A well designed, aggressive federal RPS should accomplish what a mélange of state laws cannot; a poorly designed law could exacerbate, rather than correct, state law problems. Indeed, it is clear that any federal measure will present many, if not all, of the same design questions that state RPSs do. The proposed Waxman-Markey legislation, for instance, would set a 20% RPS, but apply only to utilities that sell 4 million MWh of electricity per year. It also would count efficiency measures and exclude from its base calculation certain non-renewable power production such as new nuclear and fossil-fired plants that employ carbon capture and sequestration technology, so that its goal is not actually 20%. *See* American Clean Energy and Security Act, H.R. 2454, 111th Cong. § 101(a) (2009). The ACELA legislation would set a 15% renewables requirement but would also count efficiency and allow for various waivers and compliance by payment. *See* American Clean Energy Leadership Act, S. 1462, 111th Cong., § 132(a) (2009). In short, any advocacy for a federal RPS must begin with the proposition that its requirement would both: (1) set a minimum "floor" percentage that would expand

chance to more uniformly reap renewables' benefits—to capitalize on states' experimentation by adopting a single law that bolsters states' strengths and ameliorates their flaws.[286]

VI. RESHAPING THE LANDSCAPE: MERGING ENERGY AND ENVIRONMENTAL LAW?

The fact that state RPSs so heavily risk undermining their very purpose militates for taking the law national. In the political back-and-forth over the RPS's ancillary effects, its fundamental premise has been misplaced. The RPS, whether state or federal, requires a well-functioning, liquid market. The way state RPSs have been built so far, they confound this purpose, not fulfill it. This is the core justification for transitioning the RPS away from a thirty-six-jurisdiction regime to a central one. It must not get lost in the shuffle.

Still, the question remains: Can a federal RPS do something more than simply strengthen state efforts? So far, the arguments not answered by the need for a uniform renewables market tend to stake their claims against a national RPS, not for it. They fail to make their case.

Complaints, for instance, about winners and losers sound ominous, but they say nothing about how best to make an RPS work. The truth is that the only reason the winners-and-losers claim can be lodged at all is because there are different winners and losers today. Coal-rich states benefit economically from its extraction, just as do oil-rich states and uranium-rich states. A law that would also benefit renewables-rich states on the way to a more sustainable society is not inequitable. It is sound policy.[287] Moreover, the winners-and-losers argument skews the facts. Numerous studies have shown that every state has renewable resources utilizable under a national RPS.[288] In any event, nothing about a national

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the nation's renewables use significantly above what current state laws would; and (2) allow for and encourage concurrent state requirements that exceed that floor. This type of cooperative federalism approach is necessary because the passage of federal legislation is always rife with opportunity for rent-seeking by interested players.

[286] *See* Shelley Welton, *From the States Up: Building a National Renewable Energy Policy*, 17 N.Y.U. ENVTL. L.J. 987, 996 (2008).

[287] *See generally* ED SMELOFF & PETER ASMUS, REINVENTING ELECTRIC UTILITIES: COMPETITION, CITIZEN ACTION, AND CLEAN POWER (1997); JAMES GUSTAVE SPETH, THE BRIDGE AT THE EDGE OF THE WORLD: CAPITALISM, THE ENVIRONMENT, AND CROSSING FROM CRISIS TO SUSTAINABILITY (2008); Kevin L. Doran, *Can the U.S. Achieve a Sustainable Energy Economy from the Bottom-Up? An Assessment of State Sustainable Energy Initiatives*, 7 VT. J. ENVTL. L. 95 (2006); J.B. Ruhl, *Sustainable Development: A Five-Dimensional Algorithm for Environmental Law*, 18 STAN. ENVTL. L.J. 31 (1999); Irma S. Russell, *The Sustainability Principle in Sustainable Energy*, 44 TULSA L. REV. 121 (2008).

[288] *See* Sovacool & Cooper, *Hidden Costs*, *supra* note 171, at 35; *see also* ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, ENERGY AND ECONOMIC IMPACTS OF IMPLEMENTING BOTH A 25-PERCENT RENEWABLE PORTFOLIO STANDARD AND A 25-PERCENT RENEWABLE FUEL STANDARD BY 2025, at 14 (Aug. 2007), *available at* http://www.eia.doe.gov/oiaf/servicerpt/eeim/pdf/sroiaf(2007)05.pdf ("Considerable increases in biomass electricity generation occur in virtually every region of the United

RPS dictates that a utility serving, say, Georgia, must develop its renewable portfolio there, as is evident from the very fact that many utilities serve multiple states.[289] The Georgia company could break ground on a renewables facility in a neighboring state and then send the power home—or capitalize on renewables 2500 miles away and then use or sell the RECs, or both.[290]

Claims that a national RPS should stall because a feed-in tariff regime would better promote renewables likewise ring hollow. The biggest problem with the feed-in tariff is that every new policy initiative must start somewhere, and the feed-in tariff shoulders perhaps the heaviest burden in the American political lexicon—the moniker of "tax." As former CIA Director James Woolsey recently noted, feed-in tariffs have "the worst name in the business."[291] The RPS avoids this problem; even if its name is not the catchiest, it is not a tax, and it already has substantial momentum behind it. Besides, casting the RPS and the feed-in tariff as an either/or choice is unnecessarily narrow. Opponents of environmental protection long have used false dichotomies to wage their campaigns.[292] This is yet another case. Scholarship increasingly shows that the RPS and the feed-in tariff could work in tandem to achieve renewables deployment more effectively than either could alone.[293]

A. *The Energy-Environment Merger*

Setting these federal challenges aside, there is another RPS justification that the debate so far has overlooked but that deserves consideration: A national RPS will bring energy and environmental law closer together.[294] It is well-documented that energy and environmental law operate in separate worlds that rarely overlap, despite the fact that their

States [under a 25% RPS]."); Nogee et al., *supra* note 211, at 39 ("[A]ll regions do have some renewable energy resources, and would likely see an increase in using local resources for generation [under an RPS].").

[289] *See supra* Part III.C.

[290] *See* Sovacool & Cooper, *Congress Got It Wrong*, *supra* note 135, at 107–08.

[291] Phil Taylor, *House Will Get Another Shot at Feed-in Tariffs*, GREENWIRE, Aug. 3, 2009, http://www.eenews.net/Greenwire/2009/08/03/6/.

[292] Lincoln L. Davies, *Lessons for an Endangered Movement: What a Historical Juxtaposition of the Legal Response to the Civil Rights and Environmentalism Has To Teach Environmentalists Today*, 31 ENVTL. L. 229, 350–52, 356–57 (2001).

[293] *See* Rickerson et al., *supra* note 204, at 83–84; *see also* KARLYNN CORY ET AL., FEED-IN TARIFF POLICY: DESIGN, IMPLEMENTATION, AND RPS POLICY INTERACTIONS 9–11 (Mar. 2009), *available at* http://www.nrel.gov/docs/fy09osti/45549.pdf.

[294] For further discussion on the argument for bringing energy law and environmental law closer together, see generally, for instance, Lincoln L. Davies, *Alternative Energy and the Energy-Environment Disconnect*, 46 IDAHO L. REV. 473 (2010), and Amy J. Wildermuth, *Is Environmental Law a Barrier to Emerging Alternative Energy Sources?*, 46 IDAHO L. REV. 509 (2010).

subject matters are intrinsically intertwined.[295] Energy and the environment are two sides of the same problem. Energy law dictates our resource use; environmental law controls the effects of that use. Energy use drives our ecological problems; those problems cause us to question how we use energy. Combining the rules that govern different aspects of the same problem only makes sense.

First, and most importantly, the RPS helps meld energy and environmental law by pushing them toward a shared aim. Much of why energy and environmental law have remained so divergent is because they share disparate pasts. Energy law arose from economic concerns and utility regulation—the need for a consistent power supply at a reasonable price.[296] Environmental law, by contrast, sprung from a tradition of risk reduction and resource management—the need to protect society against toxics and the tragedy of the commons.[297] The RPS seeks to pull the fields away from their differing pasts and push them forward toward a common future, at least for electricity regulation.

The way the RPS does this is straightforward. It takes energy law's consumption-focused objective of ample supply and tempers it with environmental law's hope for a healthier, more sustainable world. It takes environmental law's technology-centered end-of-pipe remediation tools and replaces them with energy law's front-end resource planning principles.[298] It takes, in other words, elements of both fields and mixes them together—merging, in part, the disciplines.

Second, the RPS combines energy and environmental law by using a target-and-trading scheme, the very kind of market-based regulation that both fields increasingly embrace. For energy law, the trend is seen in the movement away from cost-of-service ratemaking and toward market-based

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[295] *E.g.*, Kenneth A. Manaster, *An Introductory Analysis of Energy Law and Policy*, 22 SANTA CLARA L. REV. 1151, 1158 (1982); Alan S. Miller, *Energy Policy from Nixon to Clinton: From Grand Provider to Market Facilitator*, 25 ENVTL. L. 715, 728 (1995).

[296] *See supra* Part II.A.

[297] *See, e.g.*, Brigham Daniels, *Emerging Commons and Tragic Institutions*, 37 ENVTL. L. 515, 517–19 (2007); Robert V. Percival, *Regulatory Evolution and the Future of Environmental Policy*, U. CHI. LEGAL F. 159, 164–65 (1997); J.B. Ruhl, *Reconstructing the Wall of Virtue: Maxims for the Co-Evolution of Environmental Law and Environmental Science*, 37 ENVTL. L. 1063, 1080 (2007). For critiques of environmental law's failure to sufficiently join science and policy, see ROBERT B. KEITER, KEEPING FAITH WITH NATURE: ECOSYSTEMS, DEMOCRACY, & AMERICA'S PUBLIC LANDS, at x–xi (2003); Robert W. Adler, *The Supreme Court and Ecosystems: Environmental Science in Environmental Law*, 27 VT. L. REV. 249, 249–51 (2003); A. Dan Tarlock, *Putting Rivers Back in the Landscape: The Revival of Watershed Management in the United States*, 14 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 1059, 1059–60, 1102 (2008).

[298] *Compare* Lakshman Guruswamy, *Integrating Thoughtways: Re-Opening of the Environmental Mind?*, 3 WIS. L. REV. 463, 472–76 (1989), *with* Clinton A. Vince et al., *Integrated Resource Planning: The Case for Exporting Comprehensive Energy Planning to the Developing World*, 25 CASE W. RES. J. INT'L L. 371, 382–84 (1993); *see also* David M. Driesen & Amy Sinden, *The Missing Instrument: Dirty Input Limits*, 33 HARV. ENVTL. L. REV. 65, 66 (2009).

rates.[299] For environmental law, it comes in the shift from command-and-control pollution limits to market-oriented regimes, such as cap-and-trade measures.[300] The RPS similarly relies on the market to achieve its statutorily imposed objective. Rather than dictating utility-by-utility a percentage of renewables that each company must acquire (as could have occurred through state regulatory proceedings), the RPS sets a target and then expects utilities to rely on the market to meet that target most efficiently. Thus, the RPS moves energy and environmental law closer together by showing that, as a practical matter, merging the fields might not be as difficult as one would presume. In the RPS, there is an example of how a tool increasingly used by both fields also can be employed to pursue an objective that blends both of their aims.

Despite, however, the RPS's ability to join energy and environmental law in a way they rarely have been before, no one is touting this as a rationale for a federal RPS. Why?

Perhaps the reason is that the merger's likely benefits are so obvious. Holistic governance is virtually always better than fragmentation: more effective, more efficient, more robust.[301] Or, perhaps this justification has not garnered attention because the fields have become so disconnected that the reasons for combining them no longer are plain. "Today, energy laws and environmental laws are administered separately, by separate agencies . . . based on different . . . assumptions."[302] There thus is utility in fleshing out what dividends, if any, an environmental-energy law merger might yield.

The most obvious is *efficiency*. Combining energy and environmental law should realign the fields' goals so that they work hand-in-hand rather than at odds. From the electric generation perspective, this is the jurisdictional fragmentation problem Peter Huber described decades ago.[303] Environmental law labors to curb, for instance, plants' SO_x and NO_x pollution, while energy regulation's emphasis on reliable but inexpensive

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[299] *See supra* Part II.B.

[300] *See, e.g.*, Vivien Foster & Robert W. Hahn, *Designing More Efficient Markets: Lessons from Los Angeles Smog Control*, 38 J.L. & ECON. 19, 24 (1995); Bradley C. Karkainnen, *Information as Environmental Regulation: TRI and Performance Benchmarking, Precursor to a New Paradigm?*, 89 GEO. L.J. 257, 270 (2001); Michael C. Naughton, *Establishing Interstate Markets for Emissions Trading of Ozone Precursors*, 3 N.Y.U. ENVTL. L.J. 195, 233 (1994).

[301] *Cf.* Lincoln L. Davies, *Just a Big, "Hot Fuss"? Assessing the Value of Connecting Suburban Sprawl, Land Use and Water Rights Through Assured Supply Laws*, 34 ECOLOGY L.Q. 1217, 1236–38 (2007) (assessing potential benefits from combining land and water planning).

[302] Joseph P. Tomain, *To a Point*, 52 LOY. L. REV. 1201, 1203 (2006).

[303] *See* Peter Huber, *Electricity and the Environment: In Search of Regulatory Authority*, 100 HARV. L. REV. 1002, 1013–15, 1025 (1987) ("The heart of the problem is the division of authority among several separate agencies . . . . EPA's regulatory agenda focuses mainly on continuous low-level emissions of conventional pollutants . . . . FERC reigns over its smaller regulatory kingdom in equally regal isolation . . . . The problem is that aggregate [environmental] impact depends as much on the mix of technologies chosen as on the environmental burden imposed by each alone . . . .").

electricity perpetuates construction of the very facilities that produce those emissions. The right hand does not control what the left is doing, and the left is undoing what the right is attempting. RPSs compel the hands to work together, at least to a degree. They command deployment of generation facilities that promote both fields' objectives: sufficient electricity supplies for energy law and less pollution for environmental law. RPSs, in other words, create a regulatory efficiency that did not exist before: a synthesis of policy aims.

A related benefit is the potential for *regulatory synergies*. Making energy and environmental law overlap may help the fields not only better achieve their own objectives, but may also propel them to do more than each would individually. Take again the example of a new power plant. There, environmental law's objectives might be considered fully achieved if the plant meets applicable pollution controls. Likewise, energy law's objectives are satisfied if the facility assures a sufficient electricity supply at a reasonable cost. Under the RPS, both fields better achieve their goals by not undermining each other. But RPSs can do more. The RPS might, for instance, help the facility's owner exceed mandated pollution reductions.[304] The owner also might go beyond energy law's standard objective of a sufficient electricity supply because renewable sources are, by definition, more abundant than nonrenewables over time.

Another possible benefit is *improved decision making*. Most notably, this may occur when regulators who traditionally have not consulted each other begin sharing tools, data, and expertise across the regulatory divide. This has begun in other contexts where, for instance, land and water planners increasingly rely on each other's expertise,[305] and it could happen for energy and environmental law as well. Environmental regulators that increasingly operate markets might have much to learn from utility regulators whose traditional bailiwick is economic supervision. Utility regulators, likewise, might find in environmental law's historic technology promotion[306] ways to make RPSs run more smoothly. This is, in other words, the regulatory "cross-pollenization" benefit of merging energy and environmental law.[307]

Finally, combining energy and environmental law may have a long-term benefit. It may help gear our policies *toward sustainability*. Returning once again to the new power plant example, it is obvious that today, with or without an RPS, utilities can choose to construct renewable-fueled facilities. What, then, does the RPS add? The RPS requires a more

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[304] *See, e.g.*, Jonathan D. Abe et al., *NETS: Capturing Electricity Information in New England*, ELECTRICITY J., May 1999, at 46, 51.

[305] *See* Davies, *Hot Fuss*, *supra* note 301, at 1269–74.

[306] *See, e.g.*, Stewart, *supra* note 21, at 29 & n.19, 33 & n.39.

[307] Davies, *Hot Fuss*, *supra* note 301, at 1237–38.

complete internalization of long-term externalities than health-based pollution regulation does now. For example, today's pollution laws do not include the intergenerational value of depleted nonrenewable resources; the public health effects unforeseen or not captured by politically-brokered emissions standards; or the benefits, aesthetic, moral, ecological, or otherwise, of moving toward a pollution-minimal world. To be sure, each of these objectives already is embedded in other areas of environmental law, but only to a small degree. Likewise, a direct tax or a permitting system that includes these externalities' full cost could capture them, perhaps more efficiently than an RPS.[308] The problem, however, is that those tools typically rely on immediately quantifiable societal costs—and then only the politically palatable ones.[309] Politicians, however, have intense incentives to avoid imposing on their constituents short-term costs that produce primarily long-term benefits. This is precisely why the RPS is important. It can provide an assurance that the energy supply going forward will be more sustainable. It can, in other words, make energy and environmental law not just more market-correcting, but also more planning-perfecting.

B. *The Federal-State Debate*

That the RPS can help merge environmental and energy law, and that this merger promises significant benefits, thus seems clear. The question remains, however, whether the fact that there are benefits to be gained from an RPS-induced energy-and-environmental-law merger says anything about whether the RPS should be local or national.

One obvious response is that, simply because of its scope, a national RPS is more appropriate. The 2008 Lawrence Berkeley Laboratory study showed that state RPSs at the time applied to just under half of the United States' electric demand.[310] By definition, a national RPS should dramatically increase this figure.[311] Thus, whether the RPS benefits in question are direct or supplementary, a coast-to-coast RPS that delivers these benefits nationwide should be favored over a state-by-state approach that is inherently limited in reach.

That response alone may be enough. There is, however, another,

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[308] Michaels, *Smart Policy*, *supra* note 147, at 86–87.

[309] *See, e.g.*, David M. Driesen, *Sustainable Development and Market Liberalism's Shotgun Wedding: Emissions Trading Under the Kyoto Protocol*, 83 IND. L.J. 21, 45–51 (2008); Richard J. Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present To Liberate the Future*, 94 CORNELL L. REV. 1153, 1153–54, 1157 (2009); Richard L. Revesz, *Environmental Regulation, Cost-Benefit Analysis, and the Discounting of Human Lives*, 99 COLUM. L. REV. 941, 999–1000 (1999).

[310] WISER & BARBOSE, *supra* note 114, at 5–6.

[311] It is unlikely a federal standard would apply to 100% of electric demand because some utilities would be exempted. The federal mandate also would need to be set higher than states' aggregate target—an essential feature of any federal RPS. *See supra* note 285.

perhaps stronger argument for a national law. It is that the RPS's merging of energy and environmental law could put the fields on a new path. Prior attempts to directly combine energy and environmental law are few and far between and, even then, have been modest in their aims.[312]

The RPS is different. It is bold, pervasive. It seeks to change the shape of what is, effectively, nearly half of the United States' energy supply,[313] and it compels that change to start now. The RPS is thus unlike our past, meeker efforts at energy regulatory reform, centered so heavily on research, funding, and fumbling toward sustainability.[314] The RPS demands a new vision. It looks beyond the world where energy consumption and environmental protection necessarily conflict. It searches for a different direction, a space where energy and environmental law work together, not apart.

The RPS, in other words, has the potential to act much like an off-ramp on a highway. Taking it might help put us on a course other regulatory tools cannot. It could begin a long-term cultural transition to a society reliant on resources that are not scarce rather than attempting to mitigate the ecological effects of consuming those that are.

Undoubtedly, the current regime of state-based RPSs also might accomplish this, but only to a point. A federal law is more likely to succeed at overhauling a regulatory system with coast-to-coast effects. The national stage is simply bigger. Federal law carries an "imprimatur" that state law does not.[315] It says more, more loudly, to more people. A federal RPS, accordingly, would not just push more of our generation supply to sustainable sources, it is more likely to be seen as an example for how to merge energy and environmental goals in other contexts. It is, in short, more likely to convey the message that reconciling energy and environmental law is not a local priority, it is national.

If, then, what we seek in an RPS is not just a first big step toward a more sustainable culture, but also a way to begin reinventing our system of regulation—to move power regulation forward—the path there seems clear. It is the same path all the other RPS evidence points to: a national one.

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[312] Matthew Fong, *Fueling Change: Judicial Review of CAFE Standards*, 77 U. CIN. L. REV. 759, 762–64 (2008); Michael D. Hornstein & J.S. Gebhart Stoermer, *The Energy Policy Act of 2005: PURPA Reform, the Amendments and Their Implications*, 27 ENERGY L.J. 25, 25–26 (2006).

[313] In 2008, electricity accounted for just over forty percent of national energy consumption. *See* EIA, ANNUAL ENERGY REVIEW, *supra* note 22, at 37.

[314] *See* Davies, *Energy Policy*, *supra* note 106, at 78–79.

[315] Meredith Johnson Harbach, *Is the Family a Federal Question?*, 66 WASH. & LEE L. REV. 131, 197 (2009); *see also* William P. Marshall, *Federalization: A Critical Overview*, 44 DEPAUL L. REV. 719, 723 (1995). Many scholars refer to this as the "expressive" value of a law. *See, e.g.*, Matthew D. Adler, *Expressive Theories of Law: A Skeptical Overview*, 148 U. PA. L. REV. 1363, 1364 (2000); Richard H. McAdams, *A Focal Point Theory of Expressive Law*, 86 VA. L. REV. 1649, 1688–71 (2000); Cass R. Sunstein, *On the Expressive Function of Law*, 144 U. PA. L. REV. 2021, 2024 (1996).

VII. CONCLUSION

There are many reasons why proposals for a national RPS remain in gridlock, but the most troubling may be that the public debate has lost focus. Its ascendancy through the states has made the RPS many things, but at its core, it is still about one—promoting renewables deployment to, in turn, begin changing the shape of our energy infrastructure. Focusing on whether the RPS has merit at all is wasted effort; with thirty-six local measures already in place, the point is moot. The question that remains is whether a state-based or a federal system will best accomplish the RPS's objectives.

Here the evidence is not mixed. The current state-based regime threatens to undermine the very goals it pursues. Existing state RPSs prevent the formation of a uniform renewables market because they define what is renewable, and what is a renewable credit, so differently. They then exacerbate this market distortion by erecting a stunning number of geographical barriers to trade. All these problems are then only reinforced by the myriad state RPS policy designs, a phenomenon overwhelmingly confirmed by application of the "efficacy tendency" metric developed here.

A federal approach cannot promise panacea, but it can fix the problems the state regime has created. A national approach would create a national market—fundamentally important since markets are the regulatory tool the RPS invokes. A national RPS also could have another, often overlooked benefit. It could reinforce the RPS's own efforts by helping energy and environmental law merge. If energy truly "is the center stage upon which environmental law . . . will be played" in the years to come,[316] either of these reasons might be justification enough for a federal RPS. Together, they make a strong case indeed.

Over seventy years ago, in a very different context, the Supreme Court warned that our nation "was framed upon the theory that the peoples of the several states must sink or swim together."[317] With the muddle of state RPSs looming and a federal proposal on the table in every recent session, perhaps it is time for Congress to begin heeding the Court's advice.

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[316] Steven Ferrey, *Power Future*, 15 DUKE ENVTL. L. & POL'Y F. 261, 262 (2005).
[317] Baldwin v. G. A. F. Seelig, Inc., 294 U.S. 511, 523 (1935).

APPENDIX A: ELIGIBLE RESOURCES BY STATE

State	Wind	Biomass	Methane	Solar PV	Solar / Thermal	Hydro	Geo-thermal	Ocean	Co-Gen
Arizona	•	•	•	•	•	•	•		•
California	•	•	•	•	•	•	•	•	
Colorado	•	•	•	•	•	•	•		•
Connecticut	•	•	•	•	•	•		•	•
Delaware	•	•	•	•	•	•	•	•	
District of Columbia	•	•	•	•	•	•	•	•	
Hawaii	•	•	•	•	•	•	•	•	•
Illinois	•	•	•	•	•	•			
Iowa	•	•	•	•	•				
Kansas	•	•	•	•	•	•			
Maine	•	•	•	•	•	•	•	•	•
Maryland	•	•	•	•	•	•	•	•	
Massachusetts	•	•	•	•	•	•	•	•	
Michigan	•	•	•	•	•	•	•	•	•
Minnesota	•	•	•	•	•	•			
Missouri	•	•	•	•	•	•			
Montana	•	•	•	•	•	•	•		
Nevada	•	•	•	•	•	•	•		
New Hampshire	•	•	•	•	•	•	•	•	
New Jersey	•	•	•	•	•	•	•	•	
New Mexico	•	•	•	•	•	•	•		
New York	•	•	•	•		•		•	
North Carolina	•	•	•	•	•	•	•	•	•
North Dakota	•	•	•	•	•	•	•	•	•
Ohio	•	•	•	•	•	•	•		
Oregon	•	•	•	•	•	•	•	•	
Pennsylvania	•	•	•	•	•	•	•		•
Rhode Island	•	•	•	•	•	•	•	•	
South Dakota	•	•	•	•	•	•	•	•	•
Texas	•	•	•	•	•	•	•	•	•
Utah	•	•	•	•	•	•	•	•	•
Vermont	•	•	•	•	•	•	•	•	
Virginia	•	•	•	•	•	•	•	•	
Washington	•	•	•	•	•	•	•	•	
West Virginia	•	•	•	•	•	•	•		•
Wisconsin	•	•	•	•	•	•	•	•	

APPENDIX B: CREDIT MULTIPLIERS BY STATE

State	Credit Multipliers
Arizona	Multiple, additive multipliers up to 200%
Colorado	"Community based" eligible generation (125%) Solar (300%)
Delaware	Off-shore wind (350% pre-2017) Renewables-based fuel cell (300% pre-2014) Solar (300% DG, in-state PV pre-2014) Wind (150% in-state pre-2012)
District of Columbia	Methane (110% pre-2010) Solar and wind (120% pre-2007) Solar and wind (110% pre-2010)
Maine	"Community-based" generation (150%)
Maryland	Methane (110% pre-2009) Wind (120% pre-2006, 110% pre-2009)
Michigan	Solar (300%) Certain in-state and other power (110-20%) Advanced cleaner energy (up to 1000%)
Nevada	Efficiency reductions in peak demand (200%) Solar (240% for certain customer-sited PV)
New Mexico	Agency authority to vary REC value by technology
Ohio	Biomass (potential multiplier based on price)
Oregon	Certain state-owned backup generators (200%) Solar (200%)
Texas	Non-wind (200%)
Utah	In-state solar (240%)
Virginia	Solar (200%) Wind (200%)
Washington	Distributed generation (200%) State apprenticeship construction (120%)
West Virginia	Renewable facilities sited on in-state reclaimed surface mines (150%) Renewable distributed generation (200%)

APPENDIX C: REC SHELF LIVES BY STATE

State	REC Shelf Life
Arizona	Unlimited
California	Unlimited
Colorado	5 years
Connecticut	3 years
Delaware	3 years
District of Columbia	3 years
Illinois	Unlimited
Maine	2 years, up to 33% of the going-forward requirement
Maryland	3 years
Massachusetts	2 years, up to 30% of the going-forward requirement
Minnesota	4 years
Missouri	3 years
Montana	2 years
Nevada	Up to 4 years, in PUC's discretion
New Hampshire	2.25 years, up to 30% of the going-forward requirement
New Jersey	Current year only (except for solar RECs = 2 years)
New Mexico	4 years
North Carolina	10 years
Ohio	5 years
Oregon	Unlimited, up to 20% of the going-forward requirement
Pennsylvania	3 years
Rhode Island	3 years, up to 30% of the going-forward requirement
Texas	3 years
Utah	Unlimited
Virginia	Unlimited
Washington	3 years
West Virginia	Unlimited
Wisconsin	5 years

APPENDIX D: GEOGRAPHIC LIMITS BY STATE

	Flat In-State Preference	**Weak In-State Preference**	**In-State Multiplier**	**Regional Preference**
States	Illinois Maryland Massachusetts Michigan Minnesota New Hampshire New Mexico North Carolina Ohio Texas	Minnesota New Mexico Utah	Arizona Colorado Delaware Kansas Michigan Missouri Ohio Utah West Virginia	California Connecticut D.C. Illinois Maine Maryland Massachusetts Montana New Hampshire New Jersey New York North Carolina Oregon Pennsylvania Rhode Island Washington Virginia West Virginia

APPENDIX E: EFFICACY TENDENCY SCORES

State	Aspirational Aggressiveness	Salience Distortion	Market Definition	Planning and Enforcement	Composite
Arizona	4	3.75	3	3	13.75
California	4.5	4.75	4.5	3	16.75
Colorado	4.5	2	2	2.5	11
Connecticut	5	3.5	2.5	2	13
Delaware	4.5	4	3	4.5	16
D.C.	4.5	3.5	3.5	2.5	14
Hawaii	5	3.5	3	2.5	14
Illinois	5	3.5	3	3.5	15
Iowa	3	3	1	1.5	8.5
Kansas	4.5	3	2	2.5	12
Maine	3.5	2.75	3.5	2	11.75
Maryland	4.5	3.5	3	4.5	15.5
Massachusetts	4.5	5	3	2.5	15
Michigan	3.5	2	3	4.5	13
Minnesota	5	4	2	3.5	14.5
Missouri	4	3	2	4	13
Montana	4	4.75	2.5	2.5	13.75
Nevada	5	3	3	3.5	14.5
New Hampshire	4.5	4.25	3	2.5	14.25
New Jersey	4.5	3.5	3.5	3	14.5
New Mexico	4.5	3	2	2.5	12
New York	5	3.5	1.5	1	11
North Carolina	3.5	3.5	3	2.5	12.5
North Dakota	1.5	3.5	4	1.5	10.5
Ohio	5	2.5	2	3	12.5
Oregon	5	3.5	3.5	3	15
Pennsylvania	4	2.5	2.5	4	13
Rhode Island	4	3.5	3.5	3.5	14.5
South Dakota	1.5	3.5	5	1.5	11.5
Texas	3	3.25	3	2	11.25
Utah	2.5	2.5	4	2	11
Vermont	2.5	5	5	1.5	14
Virginia	2	3	4.5	2	11.5
Washington	4	4	3.5	3	14.5
West Virginia	5	2	3	3.5	13.5
Wisconsin	3.5	4	4	3.5	15
Mean	**4.0**	**3.4**	**3.1**	**2.8**	**13.3**
Median	**4.5**	**3.5**	**3.0**	**2.5**	**13.6**
Variance	**1.0**	**0.6**	**0.9**	**0.8**	**3.2**

APPENDIX F: EFFICACY TENDENCY SCORING METRIC

Aspirational Aggressiveness

Compulsoriness	Mandatory	Voluntary			
	2.5	0.5			
Aggressiveness	Target ≥ 25%	Target = 20–24%	Target = 15–19%	Target = 10–14%	Target < 10%
	2.5	2	1.5	1	0.5

Salience Distortion

Actual Energy	Sales / Energy	Capacity	
	1	0.5	
Grandfathering	New construction (within 2 yrs.)	Lite grandfathering (within 10 yrs.)	Grandfathering (>10 yrs.)
	1	0.5	0
Credit Multipliers	No multipliers	Weak multipliers	Heavy multipliers
	1	0.5	0
Dilution	Renewables only	Renewables plus efficiency or co-gen	Renewables plus fossil or nuclear
	1	0.5	0
Utility Class Exemptions	No exemptions	Exemptions = 1	Exemptions ≥ 1
	1	0.75	0.5

Market Definition

Source Breadth	All renewables	Some limits	Extensive limits
	2	1	0
Geographic Breadth	No limits	Regional limits	In-state limits
	1	0.5	0
REC Use	Uses RECs	Uses RECs with limits	Does not use RECs
	2	1	0

Planning and Enforcement Rigor

Enforcement	Agency-enforced	Self-policing		
	1	0		
Penalties	Strong	Medium	Weak	None
	2	1	0.5	0
Cost Recovery	Guaranteed	If prudent	Silent	
	1	0.5	0	
Planning / Compliance	Advance planning *and* annual proceeding	Advance planning *or* annual proceeding	No requirement	
	1	0.5	0	