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A Look behind the Texas Renewable Portfolio Standard: A Case Study

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ABSTRACT

A renewable portfolio standard (RPS – a statutory requirement to achieve a renewable energy goal by a certain date – is the tool of choice for many state policy makers concerned about climate change and the role played by electric generation. Texas enacted its RPS in 1999; since that time, it has added the most renewable capacity of any state and has rapidly outpaced its statutory goals. The numbers do not tell the whole story, however. This article examines the Texas RPS from two public policy perspectives seldom addressed in previous studies: the politics that shaped the statute creating the RPS and threshold judgments made by the agency implementing the statute. One factor crucial to the political fortunes of the RPS in the Texas Legislature was strategic linkage, that is, associating the RPS with related issues that had ascended high on the legislative agenda, such as competitive restructuring of the state's electricity market.

Once the RPS was enacted, the Public Utility Commission of Texas (PUCT) aimed to build a practical policy framework in which renewable energy development overall would be a response both to the RPS mandate and to customer-driven demand. The PUCT adopted a "carrot and stick" approach, imposing penalties for falling short of mandated goals, while at the same time creating a portfolio of measures to ensure that the market was fully able to respond to consumer demand. The Texas experience suggests that economically sustainable renewable energy is the true underlying objective of an RPS; building competition into RPS implementation promotes economic efficiency and increases demand for renewable energy; an RPS, a system of renewable energy credits and green-power policies works best as an integrated package; the regime of rules needs to be stable; and an RPS goal need not be ambitious in order to succeed.

A renewable portfolio standard (RPS) is the tool of choice for many policy makers concerned about climate change and the role played by electric generation. A number of states – as well as Congress – are

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considering an RPS to encourage greater use of technologies that generate power using wind and other renewable resources.

An RPS is a statutory requirement to achieve a renewable energy goal by a certain date. The goal can take many forms (usually some percentage of retail electricity consumption or a specified amount of nameplate capacity), with varying degrees of specificity as to implementation rules. The essential features of a statute provide regulators with sufficient authority to set up the necessary administrative structures, assign requirements, and enforce compliance.[1] A wide variety of state RPS models already exists, responding to different policy drivers and incorporating various features.[2]

Texas established its RPS as part of the legislature's restructuring of the state's electricity market in 1999.[3] The original statutory goals were to install 400 megawatts (MW) of new renewable capacity by 2003 and increase capacity every two years after that to 2,000 MW by 2009. These goals represented a marked increase in the state's renewable capacity, which at the time was 880 MW, most of which was hydroelectric capacity built by the state's river authorities. Still, the goals were modest next to the 76,000 MW of total generating capacity Texas had at the time.[4]

By the numbers, Texas has done the most of any state with its RPS and has rapidly outpaced its original goals. The state has added 4,268 megawatts (MW) of wind power since 2001.[5] Not only is that more than any other state has installed (California is a distant second with 2,439 MW[6]), it is more than any other country except Germany, Spain, and India.[7]

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1. In a few cases, states have set non-binding targets that lack enforcement provisions. This aspirational model is substantially different from the mandatory requirement of an RPS, however. First, a non-binding aspirational goal does not entail economic consequences. Therefore, it does not alter an economic actor's rational decision-making calculus in a consistent and predictable manner. Second, an aspirational goal does not effect any predictable change in future renewable energy demand. A renewable energy developer thus faces similar investment risk regardless of whether the aspirational goal exists. A market-wide enforceable mandate creates both the need and the basis for systematic business planning, whereas an aspirational goal does not.

2. *See* Karlynn S. Cory & Blair G. Swezey, *Renewable Portfolio Standards in the States: Balancing Goals and Rules*, ELEC. J., May 2007, at 21.

3. TEX. UTIL. CODE ANN. § 39.904 (Vernon 2007).

4. U.S. Energy Info. Admin., 1990–2006 Existing Nameplate and Net Summer Capacity by Energy Source, Producer Type and State, http://www.eia.doe.gov/cneaf/electricity/epa/epa_sprdshts.html (last visited Feb. 29, 2008).

5. Elec. Reliability Council of Tex., Existing/New REC Capacity Report, http://www.texasrenewables.com/publicReports/rpt5.asp (last visited Feb. 29, 2008).

6. Am. Wind Energy Ass'n, U.S. Wind Energy Projects, http://www.awea.org/projects (last visited Feb. 29, 2008).

7. JOANNA I. LEWIS, CTR. FOR RESOURCE SOLUTIONS, A COMPARISON OF WIND POWER INDUSTRY DEVELOPMENT STRATEGIES IN SPAIN, INDIA AND CHINA 3 (2007), *available at* http://www.resource-solutions.org/lib/librarypdfs/Lewis.Wind.Industry.Development.India.Spain.China.July.2007.pdf.

These numbers do not tell the whole story, however. The compelling results for Texas belie the contentious legislative politics that have shaped the RPS law. Rational analysis occasionally played a part in the debate, but the way the Texas RPS statute evolved in the Texas Legislature has in fact been an example of what Amitai Etzioni describes as "mixed scanning"—a sort of guided chaos residing somewhere between rational planning and simply muddling through.[8] Mindful of Voltaire's political axiom "the best is the enemy of the good," RPS advocates recognized that the ultimate legislation would fall short of what renewable energy policy experts might consider ideal.

Once the statute took effect, however, the Public Utility Commission of Texas (PUCT) ensured that it was linked letter and spirit to the state's competitive electricity market. The success of the RPS in adding capacity has been due in no small part to the fact that the PUCT promulgated rules governing the RPS, green power, and renewable energy tracking as an integrated package in the context of wholesale and retail electric competition.

This article examines the Texas RPS from two public policy perspectives seldom addressed in previous studies: the politics that shaped the statute creating the RPS and threshold judgments made by the agency implementing the statute. The first sections examine the strategies that were crucial to bringing the RPS into existence by the Texas Legislature. Strategic linkages, i.e., associating the RPS with related issues that had ascended high on the legislative agenda, were important to the political compromises that shaped the ultimate statutory language. Particularly in the initial legislation, ratepayers themselves underscored crucial substantive linkages with competitive electric restructuring; deliberative polling indicated that customers regarded the ability to choose renewable power as an important aspect of a customer's right to choose a retail electric service provider.

The remainder of the article examines how the PUCT implemented the RPS and the reasoning behind key design decisions. Others have described what the PUCT did;[9] the task here is to examine why particular choices were made. The commission and its staff took what Barry Rabe describes as an entrepreneurial approach to the policy task.[10] Instead of doing no more than what the letter of the statute required, the PUCT looked for opportunities in various areas under its authority to encourage market-

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8. *See* Amitai Etzioni, *Mixed Scanning Revisited*, PUB. ADMIN. REV., Jan.-Feb. 1986, at 8.

9. *See* BARRY RABE, PEW CTR. ON GLOBAL CLIMATE CHANGE, RACE TO THE TOP: THE EXPANDING ROLE OF U.S. STATE RENEWABLE PORTFOLIO STANDARDS (2006); RYAN WISER & OLE LANGNISS, LAWRENCE BERKELEY NAT'L LAB., THE RENEWABLE PORTFOLIO STANDARD IN TEXAS: AN EARLY ASSESSMENT (2001).

10. *See generally* BARRY RABE, STATEHOUSE AND GREENHOUSE: THE EMERGING POLITICS OF AMERICAN CLIMATE CHANGE POLICY (2004).

consistent renewable energy strategies. The PUCT's rules followed a renewable energy course that had not been taken before, yet was still grounded in the statutory authority creating the RPS.

STATUTORY EVOLUTION OF THE TEXAS RPS

The original RPS called for the addition of 2,000 MW of new renewable generating capacity by 2009. When the law was passed in 1999, this goal was more than the amount of wind power then operating in California, the state with the most installed wind power.[11]

The statute itself was parsimonious, specifying only the essential elements and leaving details to the PUCT. The law cast the goal in terms of nameplate generation capacity, set a number for the goal, defined which generation technologies did and did not qualify, placed the burden of compliance on entities serving retail electricity customers, and authorized the PUCT to create a credit trading program to facilitate compliance by retailers.

By the beginning of 2005, however, it was evident that Texas would reach the 2,000 MW goal within that year, not in 2009. Nearly all of the new capacity added up to that point was wind power. The legislature increased the goal to 5,000 MW of new capacity by 2015 and changed the state's transmission laws to facilitate advance planning for wind power. Besides the new goal, the bill set a capacity target of 10,000 MW for 2025 and a target of 500 MW for renewable energy technologies other than wind power.

Also in 2005, however, the legislature added a provision to reverse how the PUCT had integrated the RPS with the voluntary green-power market. The new law required counting voluntary green-power sales toward the RPS, rather than counting it as additional to the RPS. The legislature subsequently repealed this particular provision in 2007.

Strategic Linkage

If one factor were crucial to the political fortunes of the RPS in the Texas Legislature, it would be strategic linkage. In all likelihood, the Texas RPS never would have happened as a stand-alone proposition in 1999; nor

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11. L. BIRD ET AL., NAT'L RENEWABLE ENERGY LAB., POLICIES AND MARKET FACTORS DRIVING WIND POWER DEVELOPMENT IN THE UNITED STATES 6 (2003), *available at* http://eetd.lbl.gov/EA/emp/reports/53554.pdf. In 1999, California's wind energy capacity stood at 1,646 MW, and this increased to only 1,822 MW by 2002, while Texas jumped from 180 MW to 1,096 MW within the same time span. *Id. See also* Cal. Energy Comm'n, Overview of Wind Energy in California, http://www.energy.ca.gov/wind/overview.html (last visited Feb. 29, 2008).

would it have overcome a potentially fatal threat in 2007 without being linked to larger issues. By associating the RPS with related issues that had ascended high on the legislative agenda, however, proponents successfully overcame political opposition and secured a visible, meaningful place for renewable energy in the state's overall energy development plan.

Strategic linkage worked as a political strategy in Texas largely because renewable energy—and wind power in particular—has in fact become increasingly entwined with other important issues. No longer a boutique technology with negligible economic impact, wind power is becoming a mainstream participant in a number of important U.S. markets, of which Texas was the first. Wind power is widespread enough to have a significant mitigating effect not only on greenhouse gas emissions in Texas, but on wholesale power prices as well. Transmission planners are increasingly taking wind power integration into account when assessing regional grid reliability.[12]

In the 1999 Texas Legislature, the crucial strategic linkage was with restructuring. Texas had already laid the groundwork in 1995 for competitive wholesale electricity markets,[13] and by 1999 the state's political leaders—including then-Governor George W. Bush—were ready to create competitive retail electricity markets as well. Senate Bill (SB) 7 set the statutory parameters of restructuring[14] and was as complicated as it was controversial. The legislation unbundled the state's investor-owned utilities into structurally independent generation, retail, and wires entities;[15] established detailed methods for calculating and recovering stranded costs;[16] put in place transitional mechanisms to prevent market power abuse[17] and encourage market entry;[18] and established a system benefit fund

12. *See, e.g.*, U.S. DEPT. OF ENERGY, NATIONAL ELECTRIC TRANSMISSION CONGESTION STUDY 54-57 (2006), *available at* http://www.oe.energy.gov/DocumentsandMedia/Congestion_Study_2006-9MB.pdf; N.Y. STATE ENERGY RESEARCH & DEV. AUTH., THE EFFECTS OF INTEGRATING WIND POWER ON TRANSMISSION SYSTEM PLANNING, RELIABILITY, AND OPERATIONS (2005), *available at* http://www.nyserda.org/publications/wind_integration_report.pdf; MINN. PUB. UTIL. COMM'N, FINAL REPORT—MINNESOTA WIND INTEGRATION STUDY (2006), *available at* http://www.puc.state.mn.us/docs/windrpt_vol%201.pdf. *See also* FERC Interconnection for Wind Energy, 70 Fed. Reg. 34,993 (2005) (establishing technical standards applicable to the interconnection of large wind generating plants).

13. *See, e.g.*, *Texas House Passes Bill to Deregulate State's Wholesale Electricity Market*, ELEC. UTIL. WEEK, May 29, 1995, at 7.

14. S.B. 7, 1999 Leg., 76th Sess. (Tex. 1999) *available at* http://www.legis.state.tx.us/tlodocs/76R/billtext/doc/SB00007F.doc; summary *available at* http://www.legis.state.tx.us/BillLookup/BillSummary.aspx?LegSess=76R&Bill=SB7.

15. *See* TEX. UTIL. CODE ANN. § 39.051 (Vernon 2007).

16. *See id.* §§ 39.251-.265, 39.301-.313.

17. *See id.* §§ 39.153-.156.

18. *See id.* § 39.202.

to help consumers learn about the new market and to help low-income customers in the transition.[19]

Transmission and distribution remained in the hands of regulated monopolies, but even there, the goals and operating principles changed. The Electric Reliability Council of Texas (ERCOT) became the independent operator of the transmission system, unifying into a single control area critical grid functions that up to that time had been performed by separate utilities.[20] Transmission costs throughout the ERCOT region were aggregated and assigned by formula to all ERCOT load, and a unified methodology for setting system-wide transmission rates eliminated any transmission rate "pancaking" within ERCOT.[21] The ERCOT system began to operate as a single market where wind farms in the far western part of the state could compete to serve load as far away as the Rio Grande Valley in the south.

Early versions of the restructuring legislation incorporated a goal for renewable energy capacity.[22] Deliberative polling conducted by Texas utilities before the 1999 session revealed strong ratepayer support for renewable power—support that appeared to be accompanied by a willingness to pay slightly higher rates.[23] The polling results were given great weight by the state's political leadership, especially those engaged in negotiating the details of electric restructuring. The RPS was solidly a part of restructuring from the beginning, even if the details were not.

The original goal was couched in the rhetoric of the new paradigm that SB 7 attempted to launch: "The introduction of competition and retail customer choice is expected to create opportunities that will stimulate the economic development of renewable energy technologies in the state to a

19. *See id.* §§ 39.902–.903.

20. *See id.* § 39.151.

21. The term "rate pancaking" refers to the multiple, separate transmission charges levied by each transmission utility carrying power between a generator and the purchaser. Instead, transmission charges anywhere in ERCOT are assessed on what the statute calls a "postage stamp" basis: one single transmission access charge applies regardless of how many ERCOT transmission utilities are between the seller and the buyer. The PUCT developed and employed the postage stamp method in 1997; the methodology was codified by statute in 1999. TEX. UTIL. CODE ANN, § 35.004(d) (Vernon 2007).

22. S.B. 7, 1999 Leg., 77th Reg. Sess. (Tex. 1999) (filed).

23. *See* RONALD LEHR ET AL., LISTENING TO CUSTOMERS: HOW DELIBERATIVE POLLING HELPED BUILD 1,000 MW OF NEW RENEWABLE ENERGY PROJECTS IN TEXAS (Nat'l Renewable Energy Lab., 2003), *available at* http://cdd.stanford.edu/polls/energy/2003/renewable_energy.pdf; *see also* NEB. PUB. POWER DIST., CUSTOMER MEETING ON ENERGY ALTERNATIVES: SUMMARY OF RESULTS (Aug. 19, 2003), *available at* http://www.eere.energy.gov/greenpower/resources/pdfs/0803_nppd.pdf.

level that achieves the goal [for renewable capacity] through reliance on market forces alone."[24]

The California electricity crisis of 2000—and the political soul-searching it subsequently engendered with respect to deregulated electricity markets—had not yet happened in 1999, but SB 7 was controversial nevertheless. Consumer groups opposed restructuring; municipally owned utilities (MOUs) and rural electric cooperatives (co-ops) supported it as an option but not as a requirement.[25] Because of the huge potential impact and high public visibility, the state's political leadership sought as broad a consensus as possible. The renewable energy goal secured the support of major players in the state's environmental community for the larger restructuring effort.

Some of the political compromises made with respect to the RPS in 1999 were the same as those made to secure passage of SB 7 itself. The most significant compromise was an exemption for MOUs and co-ops. These providers were not required to unbundle or to open up their retail service areas to competitors and were therefore exempt from the whole restructuring initiative. The final version of SB 7 gave them an RPS obligation only if they chose to open their service areas to competitors.[26]

While the strategic linkage with restructuring enabled the RPS to gain legislative momentum, that same linkage also diluted the effect of the RPS by excluding roughly 23 percent of state electricity use from an RPS obligation. Exempting MOUs and co-ops from restructuring was seen as the only way to secure passage of SB 7 for the rest of Texas, and the RPS was part of the SB 7 wagon train.

Collateral Attack

Early achievement of the SB 7 goal prompted efforts to increase the RPS in the 2005 legislative session. This time, however, the initiative was largely put forward on its own, without any significant link to other issues that were high on the legislative agenda. Standing alone on the hill, the proposed RPS legislation was an easy target for a collateral attack.

The initial legislation extended the timeline over which the goal was to increase. Instead of stopping at 2,000 MW of new capacity in 2009, the

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24. LEHR ET AL., *supra* note 23.

25. *See, e.g.*, Senate Committee on Electric Utility Restructuring, Witness List for February 22, 1999 hearing on SB 7. Public Citizen, Consumers Union, and Texas Ratepayers' Organization to Save Energy testified against SB 7; Texas Public Power Association (on behalf of the state's MOUs) and Texas Electric Cooperatives (on behalf of the state's electric co-ops) testified in favor. At that point, SB 7 would have included an MOU or co-op in restructuring only if the city government or co-op board of directors affirmatively opted for inclusion. *Id.*

26. *See* TEX. UTIL. CODE ANN. §§ 39.157(e), 39.203, 39.904 (Vernon 2007).

goal continued to increase for another six years until it reached 5,000 MW of new capacity by 2015.[27]

The proposed measure contained another key provision that was especially important to wind power developers: the creation of competitive renewable energy zones (CREZs) for new transmission.[28] Although wind power development had progressed rapidly in Texas up to that time, at least one major project had been canceled because of transmission constraints.[29] All of the wind power that had been added in 2001 and 2002 was in one three-county area of West Texas around the town of McCamey. The 755 MW of wind capacity exceeded the carrying capacity of the existing transmission system (around 400 MW), causing a significant amount of curtailment during the windiest and potentially most productive season.

The development of additional transmission capacity was stalled in a "chicken-and-egg" legal dilemma. Under state law, the PUCT could not allow a utility to recover the cost of new transmission without finding that the lines would be used and useful.[30] Wind power developers could not secure financing without assurance that sufficient transmission would exist, but construction of new transmission to serve a wind farm could not commence without the developer first posting a bond to cover the cost of building the line. Although the bond would be returned once the transmission was in service, wind power developers could ill afford to keep millions of dollars on hold for the five to seven years needed to build the line.

CREZs provided the PUCT with statutory authority to designate areas in which transmission could be developed in advance of the wind power development, thus getting around the "chicken-and-egg" dilemma. The bill directed the PUCT, with the technical assistance of ERCOT transmission planners, to identify areas in the state with the best renewable energy potential. The PUCT could then designate an area as a CREZ; the designation carried with it a statutory "yes" to the legal question of whether the transmission would be used and useful.[31]

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27. S.B. 533, 2005 Leg., 79th Reg. Sess. (Tex. 2005) (filed).

28. *See* ERCOT SYS. PLANNING, ANALYSIS OF TRANSMISSION ALTERNATIVES FOR COMPETITIVE RENEWABLE ENERGY ZONES IN TEXAS (2006), http://www.ercot.com/news/presentations/2006/ATTCH_A_CREZ_Analysis_Report.pdf; *see also* WIND COALITION, APPROXIMATE WIND ZONE BOUNDARIES AND CREZ SUMMARY TABLE (2006), http://www.windcoalition.org/PDFs/crez_tableandmap.pdf.

29. *See* Press Release, Cielo Wind Power, TXU Energy and Cielo Wind Power Announce Wind Project To Total 240 MW (July 24, 2002), *available at* http://pepei.pennnet.com/display_article/150139/6/ARCHI/none/none/1/TXU-Energy-and-Cielo-Wind-Power-announce-wind-project-to-total-240-MW/ (describing the 240-MW Noelke Hill Wind Ranch near McCamey, Texas).

30. TEX. UTIL. CODE ANN. § 36.051 (Vernon 2007).

31. *See id.* § 39.904(g); *see also* § 36.053(d).

The early accomplishment of the first renewable goal resulted in strong political signals to do more.[32] To some interests, however, additional wind power development posed a potential economic loss. In a functioning electricity market such as ERCOT, greater amounts of wind power production tend to reduce wholesale power prices—and, consequently, the revenues that fossil fuel generation earns.

This reduction is due to the fact that real-time wholesale prices in a functioning market tend to reflect the marginal cost of the marginal unit. In layman's terms, the market selects the least expensive supply to meet demand, and the operating cost of the most expensive unit selected determines the price paid to all of the units selected. The marginal cost of wind power is zero, however, so when wind power production increases, what otherwise would have been the most expensive unit is no longer needed. A unit with a lower marginal cost sets the market price, as shown in Figure 1.

While renewable energy advocates focused their lobbying efforts on expanding the RPS and addressing the transmission problem, opponents moved on what amounted to a collateral attack on the RPS that would deter additional wind power development. The vehicle was a vaguely worded rider to the original bill that, when sorted out, required reducing retailers' RPS requirements by the amount of green power purchased by customers voluntarily. "Notwithstanding any other provision of law, the commission shall ensure that all renewable capacity installed in this state and all renewable energy credits awarded, produced, procured, or sold [from renewable capacity] in this state are counted toward the [renewable energy goal]."[33]

Green power—optional, customer-chosen retail electricity service backed entirely by renewable energy—was emerging in the Texas market as a viable consumer product with an expanding demand base. It was consistent with some of the most important principles behind restructuring: customers are entitled to choose electricity service consistent with their preferences and a customer's choice should be honored.[34] Deliberative polls conducted by Texas utilities prior to restructuring showed that customer preferences tend to balance two main decision vectors: cost (cheaper is better) and environmental impact (cleaner is better).[35]

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32. TEX. ENERGY PLANNING TASK FORCE, TEXAS ENERGY PLAN 2005: ENERGY SECURITY FOR A BRIGHT TOMORROW 4 (2004), *available at* http://www.rrc.state.tx.us/tepc/finalenergyplan.pdf.

33. S.B. 533, 2005 Leg., 79th Reg. Sess. (Tex. 2005) (engrossed) (adding new TEX. UTIL. CODE ANN. § 39.904(m)).

34. TEX. UTIL. CODE ANN. § 39.101 (Vernon 2007).

35. *Supra* note 21.

The effect of the 2005 rider, however, was to negate the reason customers would choose green power at the very moment green power was gaining acceptance in the Texas market. The mathematics of the provision would cause the purchase of green power to replace someone else's obligation under the RPS, resulting in no additional use of renewable power and no offset of fossil fuel generation. Green power certification authorities said such a change would contradict the consumer expectations that underlie voluntary green power purchases.[36]

Favoring the rider were an association of large industrial customers (including some of the state's largest cogenerators) and one of the state's largest incumbent retail electric providers.[37] Generally, retailers not aggressively marketing green power stood to gain in one of two ways: either their cost of complying with the RPS would become smaller as the green-power market grew and displaced a larger portion of their obligation or they would gain customers as demand for green power withered and their competitors offering green power went out of business.

Industrial cogenerators selling large amounts of power to the wholesale market stood to gain through higher prices resulting from less wind power on the ERCOT system. Various analyses conducted after the 2005 session estimated that the reduction in ERCOT wholesale power costs due to 2,000 MW of wind power is in the neighborhood of half a billion dollars annually – a reduction of about three percent, based on 2006 prices.[38]

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36. Press Release, U.S. Envtl. Prot. Agency, *Important Notice to Partners Purchasing Green Power in Texas*, *in* GREEN POWER PLANET NEWSLETTER, NO. 11 (Nov. 11, 2005), *available* at http://www.epa.gov/grnpower/newsroom/planet11.htm; Press Release, Center for Resource Solutions, Green-E Repeals Its Texas Market Advisory (June 1, 2007), *available at* http://www.resource-solutions.org/where/stakeholderadvisories/2007/Texas_Market_Advisory_Repealed_6.1.07.htm. For a discussion of the economic and legal issues involved, see *infra* text accompanying notes 42–44.

37. These positions were carried into subsequent rulemaking proceedings at the PUCT dealing with the statutory language added by the rider. *See* Texas Industrial Energy Consumers' Comments on Proposed Rule at 4, Rulemaking Relating to Renewable Energy Amendments, No. 31852 (P.U.C. OF TEX., Feb. 21, 2006); Response by Reliant Energy Inc. to Commission Questions Regarding the Implementation of S.B. 20 at 8, No. 31852 (P.U.C. of Tex., Feb. 21, 2006).

38. ELEC. RELIABILITY COUNCIL OF TEX., ANALYSIS OF TRANSMISSION ALTERNATIVES FOR COMPETITIVE RENEWABLE ENERGY ZONES IN TEXAS, at ES-5 (2006), *available at* http://www.ercot.com/news/presentations/2006/ATTCH_A_CREZ_Analysis_Report.pdf. The ERCOT analysis estimated the annual generator revenue reductions that would be due to various amounts of additional wind power on the ERCOT system. On average, ERCOT projected that annual wholesale costs would fall by $253 million per 1,000 MW of new wind power. The author's own analysis, begun while a staff economist with the PUCT, examined the price effect of wind power on the system in 2006, using actual wind power output and system load. The results showed that the 1,855 MW of wind power on the system at the beginning of 2006 and the 1,280 MW added throughout the year reduced wholesale power costs by more than

The rider advocated by the industrial cogenerators in 2005 would have reduced demand for renewable power significantly – either by using green power to reduce the RPS or by eliminating the green-power market entirely – thus discouraging new wind power investment and development.

An especially important political dynamic was that the industrial cogenerators had little to lose if the entire bill were to fail. Maintaining the status quo would have sustained the legal dilemma that up to that point was preventing additional transmission development, which in turn would restrict future wind power growth. Failure of the bill also would have kept the RPS at the original level set by SB 7, eliminating 3,000 MW of future demand relating to a larger RPS. Both of these consequences would have had the effect of reducing wind power growth, thereby promoting higher wholesale power prices and higher revenues for owners of thermal generation.

Consequently, opponents were in a position to force a Faustian choice upon renewable energy advocates: accept the rider or lose everything else the bill would accomplish.

The bill died during the final hours of the regular session but was reintroduced in the following special session as SB 20.[39] Governor Rick Perry had called the special session to address school finance and property tax reform. Renewable energy was not on the agenda, but the chairman of the Senate Committee on Business and Commerce agreed to reintroduce – without amendment – the language that existed at the end of the regular session. Despite concerns expressed over the rider,[40] SB 20 came before both houses of the legislature as a package deal and eventually passed.

Response

In 2007, renewable energy proponents mounted an effort to repeal the 2005 rider.[41] This time, proponents linked repeal to two major issues that had found their way to the legislative agenda by the beginning of that year: global climate change and the need to protect Texas electricity customers from market power abuse.

$600 million. David Hurlbut, *Let Consumers Harness the Wind, Green Power*, SAN ANTONIO EXPRESS NEWS, Mar. 24, 2007 (commentary), *available at* http://www.mysanantonio.com/opinion/stories/MYSA032507.5H.hurlbutcomment.26003a8.html

39. S.B. 20, 2005 Leg., 79th Sess., 1st Called Sess. (Tex. 2005).

40. H.J., 79th Leg., 1st Called Sess. 471 (Tex. 2005) (Statement of Legislative Intent).

41. *See, e.g.*, Tex. Renewable Energy Industries Ass'n, 2007 Legislative Objectives, Nov. 9, 2006; On-line News Release, Public Citizen, Don't Mess with Texas Renewables: Repeal Subsection (m), *available at* http://www.citizen.org/texas/Dereg/Renewables/articles.cfm?ID=16212.

Both of these larger issues were propelled by TXU Corporation, the state's largest electric generating company. A year earlier, TXU announced plans to build 11 new coal-fired generating plants in Texas, and despite opposition from environmental and consumer groups, the governor agreed to seek fast-track approval for the air permits.[42] TXU was also under investigation by the PUCT for alleged market power abuse in the ERCOT wholesale power market, and in March 2007 investigators issued a notice of violation and sought a penalty of $210 million.[43] Legislation had already been introduced to give the PUCT more authority to deter market power abuse.[44]

The proposed TXU coal plants provoked protests and a high-profile publicity campaign.[45] The January 2007 report by the Intergovernmental Panel on Climate Change (IPCC)[46] heightened public concern over greenhouse gas emissions, and TXU became a lightning rod for much of that concern in Texas. Renewable energy proponents linked green power and the repeal of the 2005 rider with global climate change, arguing that the purchase of green power was an immediate action that citizens could take to reduce greenhouse gas emissions without waiting for government to act.

The effect of wind power on electricity costs was an important part of the 2007 political discussion. Parties who favored keeping the 2005 rider intact argued that repealing the provision would raise electricity costs for retail customers.[47] The counterstrategy used by renewable energy advocates

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42. *See* Press Release, Environmental Defense, Pressure, Buyout Halts TXU Coal Buildout in Texas (Feb. 26, 2007), *available at* http://www.edf.org/pressrelease.cfm?contentID=5984; Kelley Shannon, *Judge Blocks Perry's Coal Plant Order, Urges Delay of Hearing*, DALLAS MORNING NEWS, Feb. 20, 2007.

43. Pub. Util. Comm'n of Tex., Notice of Violation by TXU Corp. et al. of PURA § 39.157(a) and P.U.C. SUBST. R. 25.503(g)(7) (PUC Docket No. 34061) (Mar. 28, 2007) (on file with Natural Resources Journal).

44. S.B. 483, 2007 Leg., 80th Sess. (Tex. 2007) (engrossed). Among other things, the bill applied the statute's system-wide market concentration test to any "power region, zone, or functional market recognized by the commission in the power region." In addition, the bill would have required a generation owner to "sell at auction or otherwise divest additional entitlements to the utility's Texas jurisdictional installed generation capacity so that a utility does not control more than...25 percent of the installed generation capacity inside an ERCOT zonal boundary or a functional market recognized by the commission." *Id.* at 4, 2.

45. Press Release, *supra* note 42; David Doerr, *About 2,000 Rally at Capitol Against Proposed Coal Plants*, WACO HERALD TRIB., Feb. 12, 2007.

46. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS (Contribution of Working Group I to the Fourth Assessment Report of the IPCC) (2007), *available at* http://www.aaas.org/news/press_room/climate_change/media/4th_spm2feb07.pdf.

47. Texas Senate Video Archives, http://www.senate.state.tx.us/avarchive/ramav.php?ram=00003580 (May 27, 2007 floor discussion of conference committee report on H.B. 1090, 2007 Leg., 80th Sess. (Tex. 2007)).

was to pursue the economic linkages even further. They argued that while the RPS constituted a cost to consumers of about seven cents per 1,000 kWh,[48] the wind power on the system that year—which came to Texas because of the RPS—resulted in an estimated $600 million in lower wholesale power costs, for a savings of about $2 per 1,000 kWh. On the floor of the House, supporters argued that the cost of the RPS amounted to spending pennies and saving dollars.[49]

The Texas House received the Senate's market power bill and (among other amendments) added language to eliminate the 2005 rider. A buyout of TXU that was proposed while the legislature was in session, however, affected the urgency of the market power bill's primary raison d'être. Not only did TXU's prospective buyers commit to submitting a market power mitigation plan to the PUCT for approval, they also canceled eight of the 11 coal plants and committed to purchasing 1,500 MW of wind power.[50] The market power bill languished in conference committee.

By then, however, support for repealing the rider had increased in both chambers. Only three days before the end of the session, the language was added to a bill already in conference committee to create an agricultural incentive program to encourage biomass-fueled electric generation. Opponents in the Senate who had succeeded in killing an earlier stand-alone bill to repeal the rider had no opportunity to take action against the amended biomass bill until it came to the Senate floor for final adoption. With the full Senate voting, the bill passed two days before the close of the session.[51]

Lessons

Political scientist John Kingdon observes that issues tend to rise to an action point on the public agenda when three independent streams of events converge: a problem arises, policy options are available, and the political will exists to do something about the problem.[52] The problem may

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48. PUB. UTIL. COMM'N OF TEX., REPORT TO THE 80TH TEXAS LEGISLATURE: SCOPE OF COMPETITION IN ELECTRIC MARKETS IN TEXAS 76 (2007), *available at* http://www.puc.state.tx.us/electric/reports/scope/index.cfm.

49. Texas House Video Archives, http://www.house.state.tx.us/fx/av/chamber80/043007p.ram (April 20, 2007 floor discussion of third reading, amendment No. 1, S.B. 483, 2007 Leg., 80th Sess. (Tex. 2007)).

50. Press Release, TXU Corp., TXU to Set New Direction as Private Company; Public Benefits Include Price Cuts, Price Protection, Investments in Alternative Energy and Stronger Environmental Policies (Feb. 26, 2007) (on file with Natural Resources Journal).

51. The final Senate vote was 27-3; the final House vote was 139-4. Governor Perry signed the bill into law June 15, 2007. H.B. 1090 2007 Leg. 80th Sess. (Tex. 2007) (engrossed).

52. *See generally* JOHN W. KINGDON, AGENDAS, ALTERNATIVES AND PUBLIC POLICIES (2d ed. 1997).

be a single catastrophic event such as a hurricane, experts may identify a condition that is causing or may cause undesirable consequences, or it may arise from feedback on existing programs. On a separate track, politicians, civil servants, and interest groups with technical knowledge about a policy field continually debate a primordial soup of potential policy options. Ideas are often put forward speculatively through conference presentations, trade journals, or even newspaper opinion columns. The political stream comprises shifts in public opinion, changes in political leadership, or successful public campaigns by interest groups.

The political evolution of the Texas RPS suggests a corollary to Kingdon's construct: an idea can advance to a higher place on the public agenda to the extent that it is linked with another idea for which the three event streams have converged. Especially in 1999, the state's political leadership recognized the relationship between renewable power and a customer's right to choose, to the point that making the RPS part of restructuring was never really in doubt.[53] The often-chaotic process of consensus building that precedes a major policy shift can sometimes test the linkage, and as seen in later amendments to the RPS statute, challenges will be more severe if opposing economic interests stand to lose. The linkages, therefore, must be theoretically appropriate, empirically defensible, and politically credible.

It is in the critical consensus-building stage that policy analysis can play a pivotal role in supporting strategic issue linkage. This does not mean that well-researched interdependencies will sway the outcome in a heated floor fight. Conversations with key players in the 2007 session indicate that while analysis per se did not give the RPS its own top berth on the public agenda, the analysis did support behind-the-scenes consensus building that made it easier for lawmakers to link the RPS to an issue that already enjoyed a high position on the agenda.

IMPLEMENTATION

The manner in which the PUCT implemented the RPS statute has been a key driver behind the success of renewable energy in Texas. In contrast to the frenzied pace of a legislative session, PUCT rulemakings provided a chance for all members of the public to present their arguments and proposals in thoughtful detail. PUCT staff conducted an initial

53. According to one close observer, the Democratic sponsor of the restructuring legislation in the Texas House told parties early on that "'[w]e're doing it, and Bush will sign it.' It really wasn't very subtle or questionable." E-mail from Pat Wood III, former PUCT chairman and former chairman of FERC, to the author (Aug. 26, 2007, 10:00 PM MST) (on file with Natural Resources Journal).

workshop on July 27, 1999, after which four stakeholder working groups met six times to negotiate details of the rule. As the commission noted in its final order,

> The rule reflects the work products of the task force and working groups, incorporating numerous compromises reached by parties in the technical workshops conducted in this proceeding. Where consensus could not be reached, staff considered all views presented in the workshops and in written comments in drafting the proposed rule....[54]

An important principle has guided the way the PUCT implemented the statute: the RPS is what the state is legally authorized to *require* but is not the extent of what the state can and should accomplish. The distinction is more than semantics. The original RPS was part of competitive restructuring, which meant that the law needed to be implemented as consistently as possible with market principles. To do that, the PUCT needed to build a practical policy framework in which renewable energy development overall would be a response both to the RPS mandate and to customer-driven demand.

The policies adopted by the PUCT reflected a "carrot and stick" approach. The mandated goal was the stick—2,000 MW translated into requirements that incurred penalties if not met. The carrot was a portfolio of measures to ensure that the market was fully able to respond to voluntary demand for green power—in particular, reducing the potential for consumer fraud and giving customers the information they needed to make an informed commercial choice.

Some of the changes that the legislature made to the renewable energy goal in 2005 corroborated the PUCT's carrot-and-stick framework. At the same time that it raised the mandate to 5,000 MW, the legislature added a target of 10,000 MW. This suggests that the legislature intended that half the job be done by mandate and half by a well-functioning market.[55]

Three objectives guided the PUCT rulemakings to implement the new renewable energy policy framework.

- Create a standard currency for Texas renewable energy, applicable to any commercial use
- Make renewable energy developers compete with each other
- Make it easy for retail customers to choose green power.

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54. Pub. Util. Comm'n of Tex., Rulemaking Relating to Renewable Energy Mandate Under Section 39.904 of Utilities Code, Order, at 3 (1999).

55. As discussed elsewhere in this article, the addition of section 39.904(m) of the Texas Utilities Code in 2005 contradicted the PUCT's approach until the provision was eliminated in 2007. *See infra* notes 25-33 and accompanying text.

Consequently, when the PUCT devised its rules governing the RPS and consumer protection between 1999 and 2002, it treated the RPS, the renewable energy certificate (REC) trading program, and green-power marketing as an integrated package. All of these pieces were in place when the RPS requirement commenced along with retail competition on January 1, 2002.

RECs as the Universal Currency for Renewable Power

The Texas REC trading program was the first of its kind, although California had been exploring the concept as early as the mid-1990s.[56] First and foremost, Texas RECs needed to enable Texas retailers to satisfy their RPS compliance burdens. RECs had to provide an accurate account of eligible renewable energy production, and they had to be tradable between producers and retailers. The law imposed no further explicit requirement on the program, giving the PUCT considerable discretion in its design.

If RECs are designed to be an easily traded commodity for the purposes of compliance with the legal mandates of the RPS, they can serve non-mandatory purposes just as effectively, depending on the market environment and the attributes of the RECs. The instrument would function in exactly the same manner – accurately representing the exclusive value of a given quantity of a rivalrous commodity – but in different contexts.[57] The specific attributes of Texas RECs facilitate their use for either purpose.

REC Attributes

The Texas RPS does not distinguish between different types of eligible renewable resource generating technologies. An REC from wind power satisfies an RPS obligation just as well as REC earned by a photovoltaic or biomass facility. The requirements of the RPS were therefore relatively simple.

Simplicity in the RECs' design also kept them functional for renewable power demand apart from the RPS. The PUCT anticipated that customer demand apart from the RPS could at some point follow different preferences for different technologies. An important question that was

56. For a comparative analysis of REC markets in the United States, see ED HOLT & LORI BIRD, NAT'L RENEWABLE ENERGY LAB.,EMERGING MARKETS FOR RENEWABLE ENERGY CERTIFICATES: OPPORTUNITIES AND CHALLENGES 7-8 (2005), *available at* http://www.eere.energy.gov/greenpower/resources/pdfs/37388.pdf.

57. "Exclusive" is used here in the formal economic sense of a private good, in that ownership of an REC prevents the associated amount of renewable energy value from being appropriated by anyone else. "Rivalrous" means that once an increment of the good is used or consumed by one person, the economic usefulness of that increment is exhausted and may no longer be used by anyone else.

unanswered at the time of the rulemaking was how finely customers would discriminate between products. Would a typical green-power customer care whether one biomass facility's nitrous oxide (NO_x) emission rate was twice that of another? Or would the customer's main reference point be simply binary: does the technology produce air emissions (e.g., burning wood waste) or not (e.g., wind or solar)?

In the restructured Texas market, retail entities that offer green power products do so by aggregating RECs from various sources into a single product. Even if two biomass facilities had different emission rates, they would be averaged into a composite rate if combined in the same retail product; it is not likely that customers would see the difference between the two plants even if they cared about it. Moreover, if an individual REC were to include emission data, someone would have to provide it. Acquiring reliable emission data would impose a tradeoff: significantly higher costs if the data were obtained by the REC trading program administrator or the need for verification if the data were self-provided by the facility owner.

Given the questionable commercial usefulness and high cost of obtaining reliable emissions data, the PUCT decided not to include emission data on an REC. Instead, it determined that customers would most likely discriminate broadly among technology types and required identification of the type on the REC itself.

The PUCT opted for a parsimonious REC design. Each Texas REC carries a serial number that comprises:

- the specific facility that generated the electricity;
- the type of renewable resource generating the electricity;
- the year and quarter the electricity was generated; and
- a unique identifier for specific megawatt-hours produced by the facility that quarter.[58]

At the same time, however, the PUCT approved protocols for the REC trading program that called for posting a table containing carbon dioxide (CO_2), sulfur dioxide (SO_2), NO_x, and particulate matter emissions data for certified REC generating facilities. The table initially contained average emission rates for all units of a given technology type, but the protocols allow for reporting unit-specific rates if so directed by the PUCT.

As the program has transpired, the differences in emission rates among renewable energy generators that have emissions are not yet commercially significant. About 98 percent of the renewable energy production in Texas to date has been from wind power, which is all zero-emission. Such differences may become commercially significant if the

58. Elec. Reliability Council of Tex., ERCOT Protocols, Section 14: State of Texas Renewable Energy Credit Trading Program 14-3 (2008).

Texas Legislature establishes a separate RPS for non-wind technologies, which was proposed but not enacted in 2007.[59]

Lifespan

Another threshold issue the PUCT had to decide was the REC life cycle. The need for tradability creates a puzzle with respect to how long an REC is valid. RECs that exist for a long time are easier to trade; however, more RECs than these are in existence at any given time. Greater supply of RECs means less incentive to add more renewable energy capacity, yet the objective of an RPS is to stimulate more renewable energy production.

On the other hand, the risk associated with short-lived commodities is difficult to manage. The balance between demand and supply, including their respective price elasticities, tends to determine the market price of a commodity. If supply or demand changes faster than the ability of prices to respond, prices tend to be unstable and the market becomes a riskier place to enter into fixed-price contracts. Thus, if RECs have a short life span, supply is solely a function of immediate production, which in the case of Texas is a function of how much the wind blows. Prices are volatile, which can deter market participation and market expansion.

The PUCT set the life of an REC at three years. The intent was to give renewable energy producers and electric retailers alike a hedge against year-to-year fluctuations in REC production so that one year's surplus production could be used in the event of an unusual decline in production or surge in demand the following year.

At the same time, the lifespan was considered short enough to encourage traders to "churn" their inventories—pricing older RECs below new RECs—so that the greatest number of RECs would be used productively. RECs that expire unused amount to leaving money on the table, which any profit-maximizing producer, trader, or retailer always seeks to avoid. Maximizing REC use tends to reduce market prices, both reducing the cost of RPS compliance and aiding the development of voluntary green-power demand.

Trading

The life cycle of an REC has three stages: production, trading, and termination. The rules adopted by the PUCT treat trading as entirely within the private sector, with very little PUCT involvement. An REC may be traded any number of times between its creation and its ultimate use, and

59. H.B. 1214, 2007 Leg., 80th Sess. (Tex. 2007).

it is not even necessary for each intermediary transaction to be recorded with the trading program administrator.[60]

The PUCT, through the REC trading program administrator, certifies the production and awarding of new RECs and the ultimate retirement of RECs either for the satisfaction of an RPS requirement or for voluntary purposes.[61] In neither of these functions is the market value of an REC germane; therefore, the PUCT does not require the disclosure of the prices at which RECs are traded. What matters from a legal and regulatory standpoint is who the bona fide owner is at the time an REC is retired.

RECs are initially awarded to the owner of a certified renewable energy facility; every megawatt-hour produced by the facility during the quarter earns one REC. Once a new REC is placed in the producer's account, it may be traded any number of times at whatever price the seller and buyer negotiate. Within three years, each REC is terminated in one of three ways: it may be applied to a retailer's RPS requirement; it may be retired for a purpose other than the RPS, at the discretion of the current REC owner; or it expires unused if not applied to one of the two other uses.[62]

In short, the PUCT sought to make RECs as commercially functional as possible. It avoided encumbering RECs with information and requirements that were not necessary to the transactions that were likely to occur. It also made the life of an REC long enough to permit risk management and short enough to prevent supply stagnation.

Competition Among Renewable Energy Suppliers

The RPS requirement is a guarantee that a minimum amount of demand for renewable energy will exist in the Texas market. Yet no individual renewable energy supplier is guaranteed any part of that demand; those who want it have to compete for it. Those who compete take upon themselves the capital risk. A developer's ability to earn a return on investment depends on his ability to find a buyer for the energy generated and the RECs accrued.

Combining the growing demand for green power into the same market as the RPS means that there is no fixed upper limit to total renewable energy demand. In a normal market, competition among potential suppliers reduces prices, and as prices fall demand increases. So

60. To use a simplified example, Producer A may sell to Trader B without recording the exchange with the program administrator, and then in turn B may sell to Retailer C. The exchange may be recorded ultimately with the program administrator as a transfer from A to C, with B's intermediary role legally governed solely by its contractual arrangements with A and C.

61. *See* 16 TEX. ADMIN. CODE § 25.173(k) (2008).

62. *Id.*

while the RPS provided a fixed minimum demand, renewable energy developers themselves have the ability to stimulate additional demand through aggressive price competition in the voluntary green-power market.

Robust competition requires easy entry into the market. PUCT rules established a streamlined administrative certification for eligible REC generators; if a renewable energy facility meets the criteria, it will be approved within 30 days. The facility must meet the statutory definition of renewable energy, must have been built after 1999 (if 2 MW or larger), must be metered, may obtain no more than two percent of its annual heat input from fossil fuel combustion,[63] and may not be an existing fossil fuel plant that has been re-powered to use biomass or some other renewable energy input. All of these requirements are simple findings of fact that, if uncontested, allow quick review and ministerial approval.

Certification as an REC generator means that the facility receives RECs when it generates power, but it confers no other approval. A renewable energy facility still has to meet all other environmental and siting requirements imposed on other generators. In ERCOT, any entity generating power and selling it at wholesale must register with the PUCT as a power generating company (PGC), regardless of the type of fuel being used to generate power. Any new unit connected to the ERCOT grid must cooperate with ERCOT in a transmission interconnection study prior to generating power for the grid and must follow ERCOT market and operating protocols.

In short, REC generators are on a level playing field with respect to all other generation technologies and the rules for transmission interconnection. State law guarantees nondiscriminatory access to both the transmission system and the wholesale power market by any generation entity.[64] The only significant difference between renewable technologies and all other generating technologies is the ability to earn RECs.

Both the RPS mandate and the voluntary green-power market turn to the same supply pool, for which Texas RECs are the standard currency. One large supply pool tends to be more competitive than many small ones, and competition changes supplier behavior.[65] Not only do developers

63. For example, renewable generators powered by biomass may use a small amount of natural gas to start combustion as long as the natural gas accounts for less than two percent of the plant's annual heat input.

64. *See* TEX. UTIL. CODE ANN. § 35.004(b) (Vernon 2003).

65. The point may be illustrated by way of the Herfindahl-Hirschman Index, which is a common measure of market competitiveness used in antitrust law to assess the implications of major mergers. *See* U.S. DEP'T OF JUSTICE, HORIZONTAL MERGER GUIDELINES, *passim*, http://www.usdoj.gov/atr/public/guidelines/horiz_book/hmg1.html (revised Apr. 8, 1997). To take a simple example, two markets, each with a sole supplier, would each have an HHI score of 10,000, which indicates a perfect monopoly. If the markets were combined into

operate more efficiently and price their products lower, they also tend to speculate. As with other commodities such as real estate, speculative investment by competitors trying to keep ahead of the market has resulted in surplus supply. For example, about 3,100 MW of renewable capacity existed in Texas at the beginning of 2007. The RPS required 1,400 MW for that year, while green power demand (based on a simple linear growth trend) was expected to take up 350 MW or more. The difference was an expected surplus of about 1,350 MW over total 2007 demand, *not* including the new capacity—more than 1,300 MW—that came on line during 2007. Figure 2 shows the historical utilization of renewable energy capacity in Texas, divided between the RPS mandate, green-power sales, and supply surplus.

Surplus is a sign that the market is functioning normally. It is also an important input to price determination. Rental vacancy rates and the average length of time a house is on the market are indicators of surplus supply, and higher vacancy rates usually signal lower rents. Like their real estate counterparts, competitive renewable energy suppliers will build a certain amount of supply speculating on future demand, especially if they believe the green power market will continue to grow. As in other commodity markets where prices are determined by relative supply and demand, prices fall as surpluses grow.

Choosing Green Power

PUCT rules with respect to green power have two closely related policy drivers. One is legal: to deter deceptive trade practices. The other is to ensure that all customers have sufficient information to make reasoned choices that satisfy their various consumer preferences.

Both these drivers were addressed by the PUCT through product labeling requirements. Customer protection rules direct any retail electric provider to give its residential and small commercial customers an electricity facts label. The rules specify a standard label content and format, with the objective of providing customers with an easy means of comparing different retail electricity offerings. Each label displays the product's estimated cost, fuel mix, and air emission profile.

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a single market with two suppliers, the HHI score for the new market would be 5,000—still concentrated, but no longer a perfect monopoly. Any combining of separate markets into a single market reduces the HHI as long as there is no corresponding loss or combining of individual competitors. For more on the distinction between monopoly behavior and competitive behavior, see generally WILLIAM J. BAUMOL ET AL., CONTESTABLE MARKETS AND THE THEORY OF INDUSTRY STRUCTURE (1982).

Deceptive Trade Practices

Consumer confidence is important to the development of new markets such as green power. Fraud is one of the quickest ways to destroy consumer confidence, especially if a poorly constructed law or a lax regulatory framework enables fraud to become widespread.

Double-counting renewable energy sold to customers is regarded as a deceptive trade practice.[66] Two kinds of double-counting are pertinent to green power: fraudulently selling the same electricity to rivalrous users and fraudulently selling the same electricity for rivalrous purposes.[67] In other words, selling a given amount of green power to a given customer for a given purpose should make that power unavailable to any other customer or for any other purpose.

There is no physical distinction between electricity generated by wind power and electricity generated by a coal plant once the electrons get on the transmission system. Consequently, PUCT rules treat the electrical work value of renewable power as an economically distinct commodity. However, the fact that the power is generated by a renewable resource is another distinct source of economic value responding to both the RPS and to green-power demand, a value separate from the electricity's work value. Fluctuations in the renewable source value are independent of the generic work value of the electricity passing through the meter.

To illustrate, assume that the owner of a wind farm receives an REC for each megawatt-hour of electricity generated. If the owner sells one megawatt-hour of electricity under a green power contract to Buyer A and sells the RECs to Buyer B, then the owner would be double-counting that one megawatt-hour of renewable energy production. Buyer A would sell the electricity to retail customers as green power (combining both the work value and the renewable value), while Buyer B would buy generic power from elsewhere and combine its work value with the renewable value of the RECs.

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66. *See* NAT'L ASS'N OF ATT'YS GEN., ENVIRONMENTAL MARKETING GUIDELINES FOR ELECTRICITY (1999), *available* at http://www.eere.energy.gov/greenpower/buying/pdfs/naag_0100.pdf; CTR. FOR RESOURCE SOLUTIONS, NORTH AMERICAN ASSOCIATION OF ISSUING BODIES: DOUBLE COUNTING BEST PRACTICES (May 5, 2006) (working group decision document), http://www.resource-solutions.org/policy/naaib/docs/FinalWGDecisionDraft-NAAIB_Double_Counting_best_practices9.pdf.

67. In economic terms, "rivalrous" means that a given unit of a commodity may be used only once. Public goods such as police security are nonrivalrous in that protection for one person does not prevent protection of any other. Private goods such as real estate and automobiles are rivalrous in that ownership and use by one person or partnership precludes concurrent ownership and use by another.

Therefore, two megawatt-hours of renewable power value would be accounted for in the market although only one had been generated. The commercial expectation on the part of either buyer – that the purchase was an exclusive entitlement to the production of one unique megawatt-hour of electricity from renewable energy – would be violated, with both buyers unaware of the violation.

Double counting for rivalrous purposes is similar to selling to rivalrous users, except that it involves an additional step and different actors. A retail electric provider conveys to the customer one megawatt-hour of renewable energy value when it applies an REC to the sale of green power to that customer. Here, too, the commercial expectation is that the green-power purchase represented by the REC becomes the customer's exclusive entitlement to the use of one unique megawatt-hour of renewable power. If, in addition, it were to count the green-power sale toward its RPS requirement, however, the retailer would be retaining one megawatt-hour of renewable energy value. Again, the market would be accounting for two megawatt-hours of renewable energy value when only one megawatt-hour had actually been produced.

Fraud can be established if the seller makes a material representation that is false, the seller knows the representation is false, the seller intends to induce the buyer to act upon the representation, and the buyer actually and justifiably relies on the representation and thereby suffers injury.[68] It would be economically irrational for a customer to willingly pay a premium for a good or service such as green power unless the premium conveyed something of additional worth to the customer. If the value sought by the customer were a personal, additional, and distinct contribution to the reduction of greenhouse gas emissions and the use of fossil fuels and the seller represented that the purchase would secure such value, then the buyer would suffer injury if he or she were to pay the premium and the purchase failed to effect the reduction that was represented. Therefore, double-counting the value of the same megawatt-hour of green power raises the question of fraud because the personal, additional, and distinct reduction expected by the buyer is eliminated.[69]

PUCT rules require that all services provided by Texas retail electric providers to residential and small commercial customers must carry a label, and that "the retirement of RECs shall be the only method of authenticating

68. Ernst & Young, L.L.P. v. Pac. Mut. Life Ins. Co., 51 S.W. 3d 573, 577 (Tex. 2001).

69. A dilemma is created when double counting is the result of circumstances beyond the control of the seller, as was the case when the legislature amended the RPS statute in 2005. *See supra* note 14. Double counting that is a consequence of state law instead of the retailer's intent could still fail the four-pronged test used by the Texas Supreme Court in *Ernst & Young* if the retailer marketed green power knowing that state law created a double-counting regime.

generation for which a REC has been issued...."[70] Thus, the owner of a wind farm is prohibited from selling "renewable" electricity under a power purchase agreement to one customer and separately selling to another the RECs earned by that wind farm. The rule encourages what has become a common business practice: selling both the energy and the RECs to the same customer under the same contract.

The PUCT addressed the problem of double-counting for rivalrous purposes by requiring a retailer to distribute its RPS obligation on a pro rata basis among all of its retail products.[71] For example, if a retailer's RPS obligation amounts to two percent of its total sales, each retail service it offers – green or not – must show at least two-percent renewable content on its electricity facts label. This requirement makes it mathematically impossible for a retailer to use its RPS requirement to back a premium-priced green-power product. Instead, a retailer would have to buy and voluntarily retire additional RECs to authenticate customer sales made under a green-power label.

Stakeholder positions were split on this provision during PUCT rulemakings. Incumbent retail providers that had been spun off from the old utilities opposed it, while new retail electric providers – especially those planning to serve the green power market – supported it. The new market entrants were concerned that, given the sheer size of the incumbents' legacy customer bases and the resulting volume of an incumbent's RPS requirement, the incumbent retailers would hold an unfair competitive advantage at the genesis of the Texas green-power market. Unless rules required it, an incumbent would not need to purchase additional RECs in order to offer green-power services because it could simply incorporate its large REC requirement into a single product. A market entrant seeking to sell green power would not have a legacy customer base and would have to purchase RECs above its numerically small RPS requirement; consequently, the market entrant would face an additional cost of doing business.

Customer Awareness

The PUCT conducted a statewide customer education program a year before retail competition began on January 1, 2002. The program continued throughout the first years of full market operation. The campaign aimed to inform customers of their right to choose a retail electric provider.

The electricity facts label was part of the PUCT's customer education campaign. The intent was to make the label a standard, objective, state-certified source of consumer information so that customers could rely on the label's summary of information without having to research the

70. 16 TEX. ADMIN. CODE § 25.476(f)(4) (2008).
71. *Id.* § 25.476(f)(7).

methodology underlying the provider's claims. Retailers providing the label must follow PUCT rules governing the calculation of label information, and the PUCT monitors and enforces compliance.

Requiring a standard format allows a customer to put two labels side by side and see at a glance which product has the most renewable energy content and which has the least impact on emissions. Estimated monthly costs also appear in a standardized format on the same label, thus enabling a customer to compare both price and renewable content at the same time.

Labeling rules are interlocked with rules governing the RPS and REC trading. For example, if a retailer sells service under a label that represents the electricity as coming entirely from renewable energy sources, the retailer has only to retire voluntarily the same number of RECs as the amount of megawatt-hours sold. The RECs provide the retailer with considerable flexibility in managing the uncertainty of actual sales volume. It can purchase under contract the amount of RECs that it projects it will need for the coming year based on its business plan and forecasts. If the forecast is too low, the retailer can simply buy more RECs on the spot market; if the forecast is too high, the retailer can keep the excess RECs for use next year.

Other Implementation Issues

In addition to the preceding, the PUCT addressed a number of major issues that had not been addressed explicitly in the statute; the most controversial issue was the treatment of renewable energy capacity that had been in existence prior to the RPS.

The purpose behind an RPS is to create an incentive to build new renewable capacity; logically, there would be little purpose in providing such an incentive to capacity that already exists. Many states with an RPS have had to address the same issue.

Most of the renewable power capacity in Texas prior to the RPS was hydroelectric, and most of that served electric cooperatives and municipally owned utilities. Senate Bill 7 gave each co-op and MOU the option of opening its service territory to retail competition. Only if it opted in would a co-op or MOU have an RPS obligation. Consequently, how the PUCT decided to treat existing capacity had the potential to change the way a co-op or MOU estimated the net benefit of opting in to competition.

In the end, the PUCT decided to allow a retail entity that had historically owned or purchased power from a pre-existing renewable energy facility to apply the output of a typical year toward its RPS requirement. Each existing unit's "offset" was a fixed number based on recent production. Most important, the offset could be used only by the

entity purchasing the power as of 2001 and could not be conveyed to any other party.[72]

The PUCT also determined that ERCOT was the logical entity to administer the RPS and the REC trading program according to PUCT rules. Administering the RPS would require access to detailed data on generation and load, and as system operator, ERCOT already had nearly all of the data required.

Post-implementation Stakeholder Issues

The first years of the RPS program saw a regulatory tug-of-war between the PUCT and different parties with different economic interests in the RPS. The PUCT was attempting to create a self-sustaining market for Texas renewable power, and a stable market requires stable rules. Once the RPS took effect in 2002, the PUCT made a number of changes addressing minor procedural issues, but for the most part the PUCT avoided major substantive changes.

Nevertheless, various stakeholders petitioned the PUCT for substantive revisions that had the effect of changing the size of the mandate in the RPS calculation. Retailers sought changes reducing requirements; the wind industry sought changes to increase them.

Both attempts were consequences of the McCamey transmission congestion—the type of problem that SB 20's CREZ provisions addressed later. McCamey is a sparsely populated area in West Texas with little native load. The transmission system in 2001 had been sufficient to serve the historical needs of the area's oil and gas production (which then was in decline) but was not sufficient to accommodate all the wind power generation added in 2000 and 2001. Consequently, ERCOT had to curtail wind power production frequently during the spring of 2002, which is normally the most productive season for wind power.

Transmission congestion resulted in less wind power production and fewer RECs on the market during the first year of retail competition. REC prices increased significantly just before the first RPS requirement was assessed, and retailers asked the commission to defer all of their 2002 RPS requirement until the McCamey congestion problem was solved.[73]

The rule implementing the RPS said that events beyond a retail electric provider's control could be grounds for waiving a compliance penalty. While the rule stated that lack of transmission capacity could be

72. *Id.* § 25.173(i).

73. *See* INITIAL COMMENTS OF THE ALLIANCE FOR RETAIL MARKETERS, PUC RULEMAKING TO AMEND SUBSTANTIVE RULE § 25.173 (Goal for Renewable Energy No. 26848, P.U.C. of Tex., Dec. 23, 2002).

beyond a retailer's control, "[a] party is responsible for conducting sufficient advance planning to acquire its allotment of RECs. Failure of the spot or short-term market to supply a party with the allocated number of RECs shall not constitute an event outside the competitive retailer's reasonable control."[74]

Even with the curtailments, production from the 755 MW of McCamey wind power provided the market with enough RECs to meet a 400 MW RPS requirement. The PUCT did not change any retailer's requirement, but it did agree to increase to ten percent from five percent the amount of RPS allocation that a retailer could carry over to 2003 and 2004.

The flipside of the congestion argument came a year later when wind power developers petitioned the PUCT to change its computational procedures to account for the transmission constraints and curtailments. Commission rules convert each year's capacity requirement into an annual energy requirement by formula:

capacity requirement (MW) x capacity conversion factor x 8,760 hours.

The capacity conversion factor (CCF) is the estimated annual capacity factor for all units receiving RECs. The rules require that every two years the CCF shall be readjusted to reflect "*actual generator performance data*" associated with "all renewable resources in the trading program...."[75] The wind power curtailments resulting from transmission congestion in the McCamey area, however, depressed the calculated CCF to 27 percent, below the initial 35 percent set for the first two years of the program, and far below the 35 percent to 40 percent that wind developers said could have been produced had there been no transmission congestion.

The PUCT voted to set aside the 27 percent calculation and maintain the CCF at 35 percent for the next two years. The higher CCF increased retailers' RPS allocations by about 20 percent, and some of them appealed the decision in district court. The court remanded the decision back to the PUCT on procedural grounds,[76] and the CCF was recalculated as provided in the rule. Each retailer's overassessment for 2004 was applied as a reduction to its 2005 RPS obligation, reducing the total RPS requirement for 2005 by about 25 percent. The market was suddenly glutted, contributing to a precipitous drop in REC prices.

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74. Pub. Util. Comm'n of Tex., *supra* note 54, at 91.

75. *Id.* § 25.173(j)(1) (emphasis added).

76. The court ordered the PUCT to set the CCF as required by the plain language of the rule. Reliant Energy Inc. v. Pub. Util. Comm'n of Tex., No. GN403661 (Tex. Dist. 126th May 4, 2005).

Lessons

The PUCT implemented the RPS with the intent of making competition the engine of a market transformation process in which clean technologies could grow economically. Competition worked despite the compromises made along the way in large part because the PUCT crafted mechanisms for achieving the legal mandates of the RPS that at the same time smoothed the way for retailers to surpass the mandates and approach the more aspirational goals of the RPS.

Perhaps even more importantly, the Texas experience suggests a broader public policy conclusion: the best opportunities for renewable energy policy are often embedded in a state's unique political, economic, and historical circumstances. Barry Rabe contends that many of the most effective state agency efforts to address global climate change are not so much due to standard policy formulas, but rather to the ability of "policy entrepreneurs" to seize sometimes hidden opportunities that arise on the state political landscape and to build coalitions that can turn the opportunities into effective policy.[77] These policy entrepreneurs are "individuals who command widespread respect for their expertise on a given issue and their integrity as credible brokers of information."[78] They may be political appointees, career civil servants, or advisors outside the official structure, but, whatever they may be officially, they are "well positioned to see opportunities for new policy and to literally translate ideas for innovation into workable policies."[79]

The Texas experience, therefore, is unique only in the form of the particular opportunities that arose. A different state will have different circumstances, but the Texas experience suggests a number of general principles that can guide a state's policy entrepreneurs as they attempt to seize their own opportunities.

The Real Goal Is Renewable Energy That Is Economically Sustainable

While a literal and narrow reading of statutory language may suggest that an RPS is simply a quantitative goal, it matters how the state achieves its numbers. An entrepreneurial approach to implementing an RPS would regard the statutory goal as a means of achieving economic sustainability—a qualitative goal that more fully embodies the public interest. This implicit goal constitutes a test: does an RPS implementation strategy promote technological transformation toward an end state in which renewable energy is economically competitive with fossil fuel generation?

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77. *See* RABE, *supra* note 10, at 21–29.
78. *Id.* at 23.
79. *Id.*

The PUCT approached the test by designing the RPS as a springboard for a green-power market. The RPS seeded demand on the expectation that over time competition for the RPS will reduce costs, with lower costs leading to greater voluntary demand and greater economies of scale.

Competition Works

While ERCOT may be the most competitive electricity market in the country, it does not follow that other states must adopt the Texas model in order to make competition work. An entrepreneurial approach to RPS implementation would look for opportunities to make renewable energy suppliers compete with each other for market share. The opportunities would be unique to each state's political and regulatory circumstances. The more competitors enter the market, the more all will work to keep costs low. If the policy entrepreneurs can somehow build competition into how an RPS is implemented, prices paid by end-use customers will be lower, promoting further demand for renewable energy.

An RPS, an REC Tracking System, and Green-Power Policies Are Best Implemented as a Package, Not Separately

It makes little sense for a state to develop an REC tracking system if there is neither an RPS nor a cohesive demand for green power. RECs facilitate RPS compliance and provide the liquidity necessary for a green-power market to evolve, but by themselves they create no value. The design of an RPS should also mesh with marketing requirements for green power so that the RPS provides suppliers with a reasonable assurance of market demand and customers can have confidence in what they purchase.

An RPS Goal Should Leave Room for Green Power to Grow

As counterintuitive as it may seem at first glance, the ideal RPS goal is modest rather than ambitious. This is a particularly difficult lesson to apply politically because larger numbers attract more attention. Nevertheless, Texas has succeeded because its relatively modest RPS is not intended to be (as Texans say) "the whole enchilada." A state's renewable energy achievement is actually the sum of its RPS requirement, its voluntary demand for green power, and speculative development by competitors seeking to stay ahead of the market. An over-ambitious RPS will squeeze the voluntary green-power market, thereby undermining what should be the policy end game: economically sustainable renewable energy deployment.[80] If policy makers aim to develop an RPS in conjunction with

80. For a detailed discussion of RPS requirements, REC supply, and voluntary green power, see BLAIR SWEZEY ET AL., PRELIMINARY EXAMINATION OF THE SUPPLY AND DEMAND BALANCE FOR RENEWABLE ELECTRICITY (NREL Technical Report NREL/TP-670-42266, 2007),

customer-chosen green power (see previous lessons), the level of the RPS should be high enough to seed the market but low enough to give green power a realistic chance to grow.

The Regime of Rules Must Be Stable

Stakeholders always want what is better for them, but most also place a high premium on predictability. Policies need not be perfect as long as they are workable. Participants with invested capital at stake tend to prefer a good, stable regime to one that is nearly perfect but constantly changing. Indeed, one of the most tangible price disruptions the Texas REC market has experienced so far was a consequence of the one time the PUCT attempted to set aside its own rules on an ad hoc basis.[81] It is normal for a market to react to external shocks and influences; if the rules are consistently enforced, the players can manage.

Private Interests Do Not Always Coincide with the Public Interest

The basic economic drive for competitive advantage becomes a stronger impetus for corporate action as a renewable energy technology moves from the research and development stage into market deployment. While market-driven deployment of renewable energy technologies in general is in the public interest, those in the business may advocate doing so in ways that are not. For example, if a state's renewable energy policy favors an oligopoly of suppliers and discourages new suppliers from entering the market, prices will remain high and deployment will remain limited—an outcome that would be in the private interests of the supplier oligopoly[82] but would not be in the public interest. Arbitrating between renewable energy's private interests and the public interest when the two differ is one of the most challenging tasks a policy entrepreneur faces.

CONCLUSIONS

Policy entrepreneurs committed to renewable energy find opportunities by regarding an RPS as one causal element in a complex system of economic interests, legal constraints, political history, and physical and human resources. Opportunities may present themselves in various forms unique to a particular state. In Texas, the opportunities lay

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available at http://www.nrel.gov/docs/fy08osti/42266.pdf.

81. *See supra* text accompanying note 64.

82. This would be the case if the oligopoly supplier's markup on a small sales volume were significantly larger than the markup it would realize on a larger volume in a competitive market. Markups tend to be larger for oligopolies and monopolies than for suppliers in a competitive market.

in integrating the RPS with the overall electric restructuring effort set in motion by SB 7.

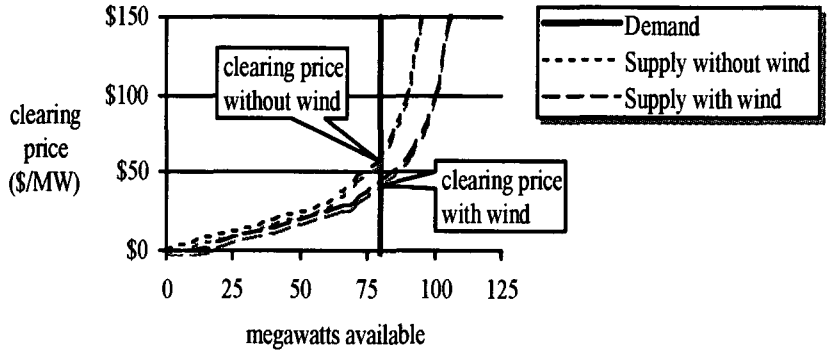
An RPS, an REC tracking system, and a green-power market all work best when designed as a package. Similarly, the success of the package depends on how well it works with external factors. The RPS has not been the only driver for wind power development in Texas; much of the credit also goes to the federal production tax credit (PTC). Yet while the PTC was a major factor in making wind power economically feasible, that benefit was not unique to Texas. A wind farm built anywhere in the United States would get the same PTC. What made developers go to Texas rather than other states with better wind resources was the market potential afforded by the Texas RPS and easy entry to compete for that market by virtue of ERCOT's nondiscriminatory transmission access.

Integrating an RPS with customer-chosen green power changes the political and economic rationale for increasing renewable energy capacity. Many previous state and federal renewable energy policies—especially those relying on rebates and other buy-downs—have reflected a "whatever it costs" approach to increasing renewable energy use. Sustainability has an economic side, however: it will be impossible to deploy enough renewable capacity to reduce the amount of fossil fuel used to generate electricity if the cost of the technology remains high. Only by bankrupting itself could a society deploy enough of the technology to make a significant difference, and political organisms do not willingly commit economic suicide.

In Texas and in many other states, opponents of renewable energy frequently argue that wind power and other clean technologies should compete economically with fossil fuel technologies without any state assistance at all. Economic sustainability does not imply laissez-faire policies, however. Opportune technologies mature toward competitiveness over time, and a progressive policy would aim to remove impediments to technological evolution. Such an approach is anything but laissez-faire, but it does require more than simple subsidies. Program designs must contemplate a longer time horizon, accommodate a host of external factors (many of which are also evolving), and adapt to the reality of risk and uncertainty.

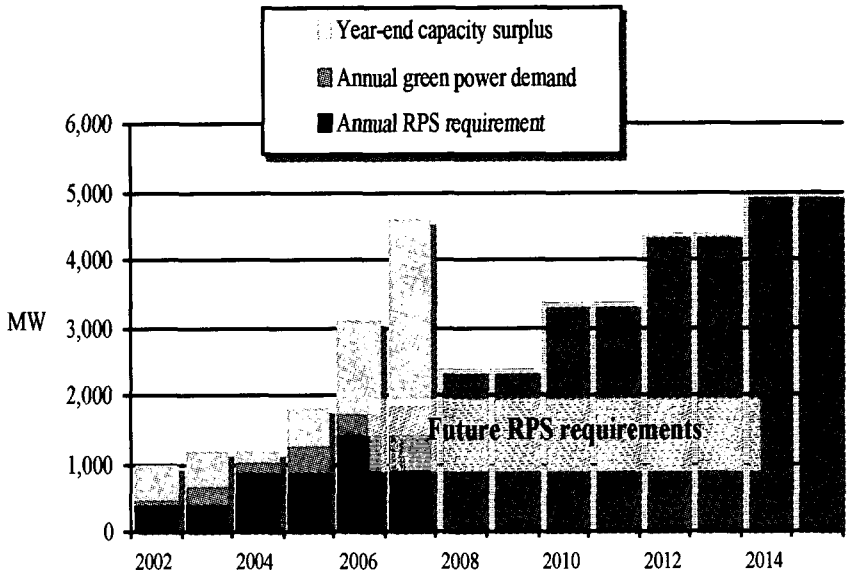
The Texas Renewable Portfolio Standard is not an off-the-shelf policy than can work anywhere as is. A number of other states have implemented RPS policies, and the results have varied as much as the wind itself. Details matter, but perhaps the most important and applicable lesson arising from the Texas experience is that it also matters how the RPS fits into the big picture.

Figure 1: How Wind Power Puts Downward Pressure on Wholesale Prices



Note: Each supply curve comprises all available generating units ordered from least costly to most costly. For daily operating purposes, cost is largely a function of the cost of the unit's fuel. Each point on the supply curve indicates how much capacity would be profitable (x-axis) at a given market price (y-axis). The market clearing price is determined by the intersection of the demand and supply curves.

Figure 2: Utilization of Renewable Energy Capacity Installed in Texas[83]



Note: Annual green power demand for 2007 is estimated based on a simple linear trend from previous years. "Capacity surplus" includes renewable capacity that produced below its normal capability due to curtailment, or whose renewable energy credits were held for use in subsequent years.

83. ELEC. RELIABILITY COUNCIL OF TEX., ANNUAL REPORT ON THE TEXAS RENEWABLE ENERGY CREDIT TRADING PROGRAM (2001-2006) (compiled from annual reports for each of these years).