PURPA: The Spur to Competition and Utility Restructuring

While free-market advocates seek to repeal the 1978 law, they should not forget that it helped create a system in which deregulation and competition became possible in the first place.

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PURPA is under attack! Originally viewed as an inoffensive component of President Jimmy Carter's efforts to overcome problems precipitated by the energy crisis, the Public Utility Regulatory Policies Act of 1978 has earned widespread enmity. In the present 106th Congress, no fewer than three bills have been proposed to gut the law of its requirements to make utility companies pay nonutility generators for the power they produce, while trade groups and proponents of free-market principles advocate its repeal as a further step toward electric utility restructuring.[1] On the other hand, several advocates of renewable energy production have rallied to support the law, arguing that its repeal should not occur without providing other means to encourage development of environmentally benign generation technologies. If nothing else, the repeal movement has heightened awareness of the law's most enduring feature—allowing independent power producers to compete with utilities—and it has set the stage for excellent drama.

Without discussing the merits or deficiencies of the arguments made by contesting parties, this article will explore the history of PURPA and its intended and unintended consequences. The article will serve as a background for dis-

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cussion of the repeal or reform of PURPA so that participants in the debate will understand the profound consequences of this important law. Most notably, PURPA helped establish the free-market, competitive principles that many people hope to extend further in the utility system.

I. The Energy Crisis and President Carter

PURPA constituted only a small portion of ambitious legislation proposed by President Carter soon after he took office in January 1977. With the country still reeling from the effects of the 1973 oil embargo—skyrocketing prices for energy, high inflation, economic stagnation, and dependence on unfriendly foreign suppliers of petroleum—the President ordered his staff to draft legislation for a comprehensive energy policy. While increasing the supply of domestic oil and coal constituted one element of his plan, Carter also adopted some of the basic tenets of unorthodox energy thinkers such as S. David Freeman and Amory Lovins. As a result, the President sought more efficient use of existing sources of energy, energy conservation, and the wider employment of small-scale renewable energy systems such as wind turbines and photovoltaics. The use of these unconventional and largely untapped resources constituted part of the President's "moral equivalent of war" to win energy self-sufficiency.

Introduced in April 1977 as one huge, 233-page bill made up of 113 separate legislative initiatives,[2] Carter's "National Energy Plan" was chopped into five parts. One bill, the Public Utilities Regulatory Policies Act, became popularly known as the "rate-reform bill" because of its goal to establish rate structures that discouraged the wasteful use of electricity. It mandated, among other things, that utilities employ marginal cost principles (rather than average-cost methods) for rate setting, and it called for the elimination of "promotional" or "declining-block" rate structures. Utility industry lobbyists worked hard to kill such reforms, campaigning especially in the Senate to quash the measures.[3] Arguing that the federal government should not stretch its long arm into affairs traditionally viewed as belonging to the states, the lobbyists ultimately proved successful. A utility trade newsletter, *Electrical Week*, for example, declared in September 1977 that the Senate bill was "tame," because "every substantive Carter rate-reform provision" had been "scuttled or weakened."[4] Requirements for state regulators to employ marginal cost standards for rate structures had been changed to require regulators to examine, but not necessarily implement, such nontraditional approaches to rate-making.

PURPA became popularly known as the "rate-reform bill" because of its goal to establish rate structures that discourage waste.

The energy debate continued into 1978, with most lobbyists and legislators concerned with energy tax policy and utility restrictions on the use of natural gas and oil. Congressmen generally paid little attention to PURPA, even though a few lobbyists and one or two senators took special interest in the innocuous-looking Section 210 of the bill. Seeking to stimulate small power production of electricity through cogeneration and renewable resources, the section required electric utilities to buy the output from nonutility generators. Advocated by President Carter's staff since April 1977, this section in the Senate bill had been weakened so that the federal government would only be able to recommend guidelines to states on how utilities would buy power from these independent producers. Little would be mandatory. But lobbyists for a New England waste-to-energy company that would have benefitted from mandatory provisions worked with a sympathetic senator to eliminate the guideline approach. In a compromise made during the House-Senate conference, the revised legislation incorporated voluntary standards for rate-setting while establishing mandatory guidelines for utility payments to nonutility generators. Consisting of only three pages out of 61 in the entire bill, Section 210 seemed of little interest to utility

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officials. In fact, *Electrical World* observed after approval of PURPA in November 1978 that "[u]tilities escaped relatively easily. Although the threat of prohibition on the use of gas and oil that had been hanging like the Sword of Damocles was formally carried out—albeit with some important escape clauses—the Public Utility Regulatory Policies Act appears to contain no nasty surprises, at least."[5]

II. Implementation of PURPA

But as later events suggested, PURPA did contain a nasty surprise in the empowerment of a new class of participants in the electric utility community. The law created "qualifying cogeneration facilities," which produced heat and electricity from fossil fuels. Such facilities would need to meet guidelines, to be determined by the Federal Energy Regulatory Commission (FERC), regarding energy efficiency, types of fuel used, reliability, and other characteristics.[6] At the same time, PURPA created "qualifying small power production facilities," which produced electricity by employing biomass, waste, or renewable resources as the primary energy input.[7] These producers would be subject to similar FERC rules.[8] Neither class of qualifying facilities (QFs) could have more than 50 percent ownership by existing electric utilities,[9] a provision that prevented power companies from using their considerable resources to dominate the market of small power producers.[10]

These qualifying facilities received special privileges under Section 210. First, according to rules promulgated by FERC, utilities would be required to purchase power from QFs, thus providing the new players a guaranteed market for their electricity. The rates paid for the QFs' power should be favorable to the independent producers, Congress stated, but they should also "be just and reasonable to the electric consumers of the electric utility and in the public interest."[11] As an upper limit, the rate should not exceed the "incremental cost"[12] of the utility, defined as "the cost to the electric utility of the electric energy which, but for the purchase from such cogenerator or small power producer, such utility would generate or purchase from another source."[13] After a year of hearings, FERC policymakers chose to use the upper limit, known later as the "avoided cost," as the payment to QFs, with each state's regulatory commission developing methods to determine that cost. In addition to these provisions, Section 210 exempted qualifying small power producers whose capacity remained less than 30 MW and qualifying cogenerators of any size from both the Public Utility Holding Company Act and the Federal Power Act. Small power producers whose capacities exceeded 30 MW but were smaller than 80 MW won exemption only from the former law. Meanwhile, QFs would also be exempted from state laws regarding rate regulation.[14] As noted in the House-Senate conference report, lawmakers offered these special rights specifically as a way to encourage cogeneration and small-power production. These rules would alleviate small producers from the burdensome and lengthy process by which utilities themselves must set rates. "The establishment of utility type regulation," noted the conference report, "would act as a significant disincentive to firms interested in cogeneration and small power production."[15]

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Becoming aware of some of the implications of Section 210 and other parts of PURPA, utility managers and some regulatory bodies tried to block implementation of the law. In one case, begun in April 1979, Mississippi utilities and the state's regulatory commission sued FERC for trying to interfere with state activities. Though a U.S. District Court agreed with the plaintiffs, the Supreme Court in June 1982 decided that federal laws pertaining to utilities were legal since utilities participated in interstate commerce and had been previously subject to federal regulation (such as oversight enabled by the

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1935 Public Utility Holding Company Act).[16] But the fight had not yet finished. Focusing on the incentives provided to qualifying facilities, a few utilities in July 1980 sued on the grounds that FERC's high avoided-cost payments had been selected arbitrarily and had violated PURPA's dictum to set rates that would be fair to consumers. Again, a lower court agreed with the utilities; but the Supreme Court in May 1983 overturned the decision. Relying on the House-Senate conference report, the Court observed that FERC's requirement for using full avoided costs as the rate to pay QFs harmonized with the goals of PURPA's framers. While the high rate would not necessarily lead to lower consumer rates, the Court claimed it would further Section 210's goal of encouraging cogeneration and small power production. Additionally, the FERC rules would serve the public interest by decreasing consumers' reliance on scarce fossil fuels.[17]

The two Supreme Court rulings ended a period of "protracted uncertainty"[18] and eliminated whatever wariness remained on the part of potential cogenerators and small power producers.[19] Because of the litigation surrounding the law, energy entrepreneurs had been reluctant to pursue nonutility investments vigorously, with one study performed by an organization of cogenerating companies speculating that 200 to 300 projects may have been deferred due to lower court rulings.[20] Utilities also hesitated to enter into contracts or to provide interconnections because of the possibility that they might not be required to make those arrangements after all.[21] Now, to the chagrin of many utility executives, the Supreme Court had reinforced the legality of PURPA and especially of its encouragement of cogenerators and small power producers.

The QF floodgates opened quickly with the end of uncertainty. In California especially, a favorable political climate (fostered since 1975 when the unconventional Governor Jerry Brown took office) helped ensure that the California Public Utilities Commission (CPUC) would implement generous avoided-cost rates for nonutility generators. Convening a conference among utility managers and QF representatives in May 1983, the state commission hammered out a plan that offered QFs high rates for electricity and capacity for a period of 10 years. Prices for the first decade reflected the widely held view that oil prices (and avoided costs) would remain high and escalate. After the first decade, avoided-cost payments from utilities would match their current short-term marginal cost for producing electricity. Known as interim Standard Offer 4 (SO4), the payment schedule became available to anyone who expressed an interest in producing power under PURPA's provisions. Though some observers expected only a few hundred megawatts of capacity to be offered, entrepreneurs signed up for more than 15,000 MW by 1985. Developers rushed to sign interim SO4 contracts partly because energy prices soon began declining, rather than increasing as had been expected, thus allowing entrepreneurs to earn a windfall if benchmark oil prices continued to slide. In April 1985, the CPUC realized that the state's utilities would be inundated with expensive QF power, and it suspended the interim SO4. However, any company that had already received a contract could exploit it as long as the firm began producing power within five years. Partly as a result of these profitable contracts, California became a mecca for PURPA power. By 1995, the state's nonutility producers delivered almost 60 billion kWh of electricity, up from 4.9 billion kWh in 1983.[22] While other states sometimes required utilities to pay high avoided costs, none could compare to the 10-year guarantee that California offered under interim SO4.

The CPUC realized that the state's utilities would be inundated with expensive QF power and suspended the interim SO4.

III. The Consequences of PURPA

A. Flourishing of Small Power Production Technologies

As perhaps its most significant consequence, PURPA removed the

barriers to entry in the generation sector of the electric utility business. By doing so, PURPA unwittingly encouraged development of technologies that subsequently led to serious questioning about the natural monopoly rationale for utility regulation.

This chain of events began when PURPA QFs demonstrated, in several cases, that they could produce power as cheaply or more cheaply than their utility counterparts. Cogenerators, for example, provided the nation with 50,594 MW of capacity in 1995, up from an estimated 10,538 in 1979,[23] and they could build their small plants, usually in the range of between 35 and 200 MW, at costs between $700 and $2,000 per kW. These costs compared favorably to the cost of utility-owned generating units. Other independent power producers took advantage of rapidly advancing gas turbine technology. Based on hardware developed for the aerospace industry, small gas turbines in combined-cycle systems reached thermal efficiencies of almost 60 percent while costs declined to well under $1,000 per kW for units smaller than 200 MW.[24]

As President Carter had hoped, PURPA also stimulated development of less conventional, renewable energy systems. Taking advantage of lucrative avoided-cost rates offered by some states, along with tax incentives provided by state and federal governments, entrepreneurs and manufacturers rapidly pushed the state of the art for technologies that generated power from the sun and wind, to name just two. Solar-thermal production of electricity improved so much during the 1980s that costs declined from about 24 cents per kWh to about 8 cents.[25] Photovoltaic cells also saw costs decline—by about 80 percent since 1980. Although both of these technologies still produce electricity that is not cost-competitive with central generation utility power, they offer the

advantage of benign environmental impacts. Moreover, in isolated locations, photovoltaics have demonstrated high value and economic competitiveness, since their use obviates the need for costly transmission and distribution lines. Even more competitive for traditional situations, wind power technology has made tremendous leaps since PURPA's passage. By the mid-1990s, development of new machines that draw power from moving air has brought down the cost of electricity to about 5 cents per kWh, comparable to utility-supplied power in several markets.[26]

B. Questioning of Natural Monopoly Rationale and Regulation

The success of small-scale cogeneration and renewable energy technologies challenged the notion that large-scale, centralized power plants owned by utilities provided the least expensive electricity possible. Because traditional steam turbine technology appeared in the 1970s to show *dis*-economies of scale and halted improvement in thermal efficiency, utilities could no longer lower the cost of power by using ever-larger power units.[27] Companies stuck with large nuclear and fossil plants, for example, found their power production costs had skyrocketed, threatening the financial future of their firms. On the other hand, cogenerators and some small-scale renewable energy producers realized that they could compete effectively with their equipment that took advantage of economies of mass production rather than economies of scale. Cogenerator entrepreneurs, for example, employed modular, advanced small-scale technology (such as gas-turbines) that produced both heat and electricity as salable products. In the early-to-mid-1990s, they found they could produce power for as little as 2.5 to 3 cents per kWh, undercutting utilities by a margin of 5 to 15 percent.[28] The competitive pressure from these cogenerators helps explain why utilities consistently lowered their rates to industrial customers from 7.9 cents per kWh in 1982 to 4.7 cents per kWh in 1995 (in inflated 1995 cents).[29]

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Competitors' ability to produce power as cheaply as (or cheaper than) utilities proved to be a powerful argument against the monopoly rationale for utility companies. After all, such an outcome should not occur in a business that justified its monopoly status partly on the basis that it could demonstrate decreasing costs through economies of scale. In other words, the regulated utility, in theory, should be able to produce power more cheaply than its competitors. When this condition no longer existed, due to the fundamental change in the economics of electric power production technology, then one rationale for utilities' natural monopoly status eroded. As observed in 1984 by William Brownell, a staff member of the California Public Utilities Commission, deregulatory efforts had already been stimulated by the combination of "the leveling off of scale-related technological advance in conventional generation technologies and the emergence of cost-competitive small power technologies . . ."[30] Officials at FERC expressed similar views about the value of regulation in light of the increasingly competitive generation sector of the utility business. "The traditional defense of regulation," FERC Commissioner Charles Stalon noted in 1987, "has been economies of scale. There are no particular economies of scale apparent on the generating side any more, and therefore that argument . . . lacks persuasive force today."[31]

Examples of successful PURPA competitors also questioned other arguments for natural monopoly status. The high capital expenditures needed to offer service to customers constituted a supposed barrier to entry, for example, thus giving credence to the notion that only a single utility company could efficiently produce and sell electricity. But the experience of PURPA demonstrated that such barriers may not be so high after all, at least in the power generation

sector. Entrepreneurial companies such as the scores of cogenerators and renewable energy companies successfully raised funds and managed financial risks to build their plants. And they did so without depending on mostly guaranteed profits provided by rate-of-return regulation. Of course, one must note that PURPA itself lowered the risks of entering the generation business. Because states often required utility companies to pay generous rates for the QF power, the nonutilities could secure capital more easily than they otherwise would have. The law also exempted the new independents from stringent financing requirements imposed on regulated utilities. PURPA therefore helped shift much of the risk in building independent power plants from the entrepreneurs to utilities—quite a benefit. Nevertheless, the proliferation of eager QFs suggested that the barrier to entry no longer proved insurmountable.

Finally, PURPA questioned the natural monopoly rationale for regulation by attacking the notion that utilities made the most efficient use of society's resources. According to early twentieth century economists and political reformers, natural monopoly utilities advanced society's welfare in part because they avoided duplication of facilities. As a corollary, regulated power companies would also take advantage of equipment that converted raw fuel into electricity in the most economically efficient manner. But it appeared in the 1980s that utilities had been less than totally successful in achieving this goal. Cogenerators and renewable energy producers could, indeed, exceed the 35 percent to 40 percent efficiency obtained by utilities' large-scale turbine-generators while meeting or exceeding environmental standards. This experience again suggested that perhaps utilities did not deliver all the expected benefits of a natural monopoly.

C. Introduction of Free-Market Principles through Avoided-Cost Methodologies

Beyond discrediting some rationales of natural monopoly, implementation of PURPA added

to the arsenal of market-based principles and to creation of the increasingly competitive environment in the utility system. It did so first by requiring calculation of utilities' avoided costs using marginal-cost principles. This computation turned out to be trickier than first imagined, but once a figure had been arrived at for a utility, it provided the basic information necessary for development of a competitive market. QF entrepreneurs instantly possessed a target figure that they could use to determine the economic feasibility of their projects. If they could array the combination of technology, fuel resources, tax incentives, and financing means that would allow them to generate electricity for under the stated avoided cost, then they knew they were (literally) in business. While administratively determined avoided-cost calculations did not exactly emulate free-market mechanisms, where a number of competing companies offered the buyer different prices and services, they nevertheless constituted a step in the direction toward greater competition. Robert Keegan, a former Massachusetts regulator, observed in 1990 that "the avoided-cost standard has resulted in an increased familiarity with value of service-pricing principles and efforts to approximate the market clearing price which would be derived in a truly competitive market for electric generation."[32]

Moving closer to a pure form of competition, in which a market consisting of numerous buyers and sellers determined prices based on supply and demand, regulators, utilities, and QFs in some states developed bidding schemes. The motivation was simple to fathom: all parties experienced difficulties in calculating avoided costs. At the same time, in situations in which regulators pegged the avoided cost too high or without limitations to the amount of QF power that could be purchased, utilities attracted too much QF capacity—a situation sometimes referred to as the "California problem" given the state's problems with oversubscription to the interim Standard Offer 4 contracts.[33] In these bidding programs, operated by more than 50 utilities by mid-1991, a utility or regulatory body authorized the need for a certain amount of capacity and invited QFs to submit bids. In most cases, regulatory bodies then established bidding criteria. The price of power constituted one major criterion, but so did non-price considerations such as location, reliability of fuel supply, security guarantees, and dispatchability of resources.[34]

In practice, the auctions enjoyed some success, with utilities receiving more than enough bids from potential QFs. In 1986, for example, Virginia Power sought approximately 1,000 MW of capacity for use by 1990. It received bids for 53 projects and more than 5,000 MW of capacity, from which it chose seven contracts for about 1,178 MW.[35] In another auction, the utility negotiated 2,041 MW of capacity at "very attractive" prices, according to company president William Berry. The new bidding scheme struck him as "a clear-cut success" for the firm and its customers.[36] Other utilities enjoyed similar experiences, with most receiving capacity bids of between seven and 23 times the requested need.[37] Overall, state regulators (as well as FERC commissioners who oversaw implementation of the law[38]) appeared to view competitive bidding as compatible with the spirit and letter of PURPA.

The use of avoided costs, whether determined from economic models or from bidding auctions, also proved useful in expanding competition beyond the realm of supplying generating capacity and energy. In states where commissions had been entrusted to develop overall resource acquisition plans for utility and nonutility companies, regulators in the mid-to-late 1980s began using avoided-cost calculations as a benchmark that assisted them in making demand-side choices. No longer limited only to considering generation options, regulators using "least-cost utility planning" or "integrated resource

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planning" principles could compare the cost of energy-efficiency options to the avoided cost of supply. When the demand-side options proved less expensive than supply options, commissions could order selection of the former. The avoided-cost mechanism that PURPA brought to the forefront therefore allowed price comparison of a new class of options heretofore not considered. As former Maine regulator Cheryl Harrington pointed out in 1994, PURPA's mandate of avoided-cost calculations provided the "proper analytic framework" that helped make demand-side management a viable planning option alongside traditional and nontraditional supply-side choices.[39]

D. Pay for Performance

Through its implementation, PURPA also started the process of eliminating other aspects of rate-of-return regulation, replacing them with free-market principles, thus adding to the deregulatory stress already building. One such principle consisted of the simple notion of "pay for performance." Applied to qualifying facilities, the concept meant that generators only earned money when they produced power: no electricity production, no payments. To be sure, small power producers, especially renewable energy producers, benefited in the 1980s from tax credits and other incentives that were tied to the amount of invested capital. But once completed, these projects only produced revenue when they generated kilowatt-hours.

This type of payment system differed from the one existing under rate-of-return, "cost-plus" regulation. Since early in the twentieth century, power companies had been allowed a fair return on their investments made to produce and deliver electricity. Though they earned the return when they sold electricity, they almost always could count on recovering the investment and making a profit so

long as those investments had been prudently made. Utility managers therefore incurred little risk in making investments, but they also had little incentive to reduce costs and find new ways to improve efficiency. The regulatory structure offered financial rewards based on the cost of investments rather than on utilities' performance in making and providing electricity. Capital base meant almost everything. Efficiency took on a secondary, if not lower, priority.

The pay-for-performance standard, which applied to PURPA producers, found other applications within the realm of regulated utilities in the 1980s. The most notable case, perhaps, consisted of the settlement between the California Public Utilities Commission and Pacific Gas and Electric Company dealing with its Diablo Canyon nuclear plant. PG&E's plant had a troubled history, dating to planning in the 1960s, when electricity growth rates in California suggested to PG&E planners—as well as to utility planners around the country—that nuclear power constituted the most cost-effective and environmentally sound manner of meeting future demand. Scheduling completion of the plant for 1973 or 1974, the company encountered public and political opposition to nuclear power in the 1970s that caused it to withdraw its applications for construction of other nuclear stations.[40] Meanwhile, concern for seismic safety and other issues at Diablo Canyon delayed operation of the plant's two nuclear units, the first of which was completed (but not yet operating) in 1977.[41] After the 1979 accident at the Three Mile Island nuclear plant in Pennsylvania, PG&E conducted retrofit work on its plant, as did many other utilities on their nuclear stations.[42] Further delays and cost escalations occurred when managers discovered design errors: some construction had apparently been performed from blueprints that had been reversed by accident.[43]

Though it won regulatory approval and started operation of the units in 1985 and 1986, PG&E still encountered problems. The CPUC reviewed the case that permitted cost recovery of the

plant in 1988 and introduced pay-for-performance as part of a deal with the company, which wrote off close to $500 million in uncollected Diablo Canyon revenues and costs. As part of the settlement negotiated between the company and interested parties, future revenues from Diablo Canyon would depend largely on the performance of the plant. If it operated well, the company could expect to receive increasing revenues, based on a formula that boosted per-kWh revenues from 7.8 cents in 1988 to 11.9 cents in 1994 (and with further increases in later years based on a consumer-price-index formula). By removing the plant from traditional rate-base treatment, the company assumed most of the risk of operating the plant, while customers avoided paying the costs associated with the plant's delays. On the other hand, the company stood to profit the most if the plant performed well.[44] Indeed, the approach seems to have provided effective incentives to the company, which operated the plant superlatively—enough to bring the company about 15 percent of its earnings in 1991.[45]

The concept of pay-for-performance clearly won adherents within the CPUC. The settlement gave PG&E market-like incentives to operate the plant well—something that did not exist under traditional regulation. In doing so, the agreement helped the commission avoid the political problem of forcing consumers to pay for an expensive plant that might not operate efficiently. In other words, the Commission shifted the risks and rewards of the plant from consumers to the utility. But the company only earned the rewards when the plant operated well; when it performed poorly, stockholders—but not consumers—suffered financially, like any other company in a free market.[46]

This foray into the use of market-based incentives stimulated similar efforts. When California's utilities, environmental groups, and

other parties collaborated in 1989 to 1990 to develop efforts for increasing the scope of energy-efficiency programs, they asked the CPUC to approve a pay-for-performance approach to give incentives to utilities. Instead of basing returns solely on the amount of invested money, California regulators in 1990 authorized payments tied to the actual energy savings experienced by the utilities' customers. Pacific Gas and Electric shareholders earned, for example, 15 percent of the net value of the energy savings enjoyed by customers.[47] During the first few years of the energy-efficiency programs' existence, the company determined the net value largely by making "engineering estimates" of the quantity of energy saved. When critics pointed out that these estimates often proved unreliable, the CPUC ordered improved measurement and evaluation techniques to verify the savings. Even so, California's energy-efficiency providers could only earn revenues when they performed as promised, a concept that differs profoundly from traditional rate-of-return regulation.

Soon thereafter, San Diego Gas and Electric Company proposed a performance-based rate scheme that rewarded the firm for its overall efficiency instead of on the "tonnage of money invested." Claiming that traditional regulation made utilities "very process-oriented and bureaucratic," San Diego chairman and CEO Thomas A. Page floated the idea of allowing shareholders and customers to share the benefits accrued if the company could reduce costs through shrewd purchases of fuel and other sources of electricity and through its efficient operation of facilities.[48] Pacific Gas and Electric followed suit in 1994 by offering to freeze several components of customers' bills in return for future rates being determined by an index based in part on the company's ability to control costs.[49] Receiving less publicity than regulatory reforms in trend-setting California, commissions in Wisconsin, New York, Alabama, Massachusetts, and Maine already had implemented rate-making formulas that rewarded compa-

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nies for operating efficiently.[50] Starting as early as 1986, for example, one Mississippi utility developed a program in which it could earn more money, or be penalized, depending on how it scored on seven indicators of performance evaluation.[51]

IV. PURPA's Future in a Restructured Utility System

In summary, implementation of PURPA stimulated creation of a free market for electricity. It did so by, first of all, breaking down the vertically integrated monopolistic industry structure prevailing for about 70 years by encouraging energy-efficient nonutility generators to produce electricity for the utility grid. The law therefore created a community of competitors necessary for the efficient exercise of free-market principles. Moreover, by often producing low-cost power, QFs demonstrated that the natural monopoly rationale for utility regulation no longer carried as much weight as it did early in the century. PURPA therefore inaugurated a series of events in the utility system that contributed to the impulse in the 1980s and 1990s for further deregulation. Additionally, by PURPA's requirement that utilities publicize their avoided costs of producing power, competitors on the supply- (and demand-) side of the business finally obtained the information they needed as another fundamental element of an efficient marketplace. Finally, PURPA mandated payments to QFs based only on their output rather than capital invested, a principle that helped devalue the regulatory world's notion of cost-plus accounting and one that found widespread use by utilities, demand-side management service providers, and other participants in a system moving toward use of free-market principles. PURPA therefore contributed to the pressure for more comprehensive legislation to restructure the utility system. That pressure culminated in the National Energy Policy Act of 1992 and in state laws passed since 1996 that deregulated the wholesale and retail markets for electricity.[52]

Despite its role in introducing competitive mechanisms in the utility system, PURPA has engendered a great amount of antagonism in recent years. Some critics, for example, object to QFs' ability to obtain preferential treatment from state regulators, a concept inimical to free-market principles. As competition becomes increasingly the norm, formerly regulated utilities cringe at the notion that they must still pay PURPA QFs rates that often exceed the cost of generating power themselves. In such situations, the power companies are at a competitive disadvantage compared to the entrepreneurial merchants of power that have no obligation to buy electricity for resale. It is no surprise, then, that a group of utilities, inundated by QF contracts, have coalesced to create the PURPA Reform Group, whose major goal is to repeal the energy-crisis-era law.[53]

But PURPA retains supporters. Several environmental groups, for example, have resisted repeal of

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the law because it provides incentives for the development of renewable energy resources. They point to the increasing cost-effectiveness of several renewable energy technologies and argue that their further development, with PURPA incentives, will help the nation develop a sustainable source of electricity for the future. Without PURPA, they assert, the free market would provide few, if any, incentives to help the nation achieve greater fuel diversity and deflect the worst effects of another energy crisis. Others argue that even in a competitive environment, formerly regulated utilities would still retain huge market clout; PURPA helps level the playing field for nonutility companies by ensuring that they will find a market for their power. Finally, some supporters of PURPA note that repeal of the legislation should be part of comprehensive restructuring legislation and should not be done in a piecemeal approach. That way, the goals of PURPA could be achieved in different ways.[54]

Several advocates of renewable energy, such as the American Wind Energy Association, appear to be pursuing this last approach seriously. Realizing the strength of political forces for the repeal or modification of PURPA, they have sought to win support for alternative measures that would still yield incentives for development of environmentally benign generating technologies. Instead of relying on PURPA, this organization, joined by several others, has pressed for states and the federal government to implement renewables portfolio standards (RPS) in their deregulation legislation. The standards would require that all companies involved in the sale of electricity buy a certain amount of power (or acquire tradable credits from other firms) generated from renewable energy providers. The government would compel companies to buy the electricity, thus creating a market for renewable

power entrepreneurs, but the policy would depend on a free market for the sale of credits, thus encouraging economic efficiency and innovation.[55] Indeed, the concept of the RPS has been gaining adherents. One restructuring bill in the 105th Congress, for example, required an RPS that would grow from 2.5 percent in 2000 to 20 percent in 2020,[56] while a White House proposal, submitted in 1998, seeks a 5.5 percent RPS by 2010.[57]

Whether PURPA's repeal is warranted or not, it is clear that the law did more than President Carter and his staff envisioned more than 20 years ago. Not just a narrow measure that sought to improve the efficiency of generating electricity, the law unintentionally challenged traditional regulatory policies and encouraged competition in power generation. If critics attain their goal of repealing PURPA, it will be largely because of the law's inadvertent success in advancing the principles of the free market that are being espoused so passionately by today's restructuring advocates. ■

Endnotes:

1. In 1999, the first session of the 106th Congress is considering S. 282, The Transition to Competition in the Electric Industry Act, introduced by Sen. Connie Mack (R-FL), Jan. 21, 1999; HR 971, The Electric Power Consumer Relief Act of 1999, introduced by Rep. James Walsh (R-NY), Mar. 3, 1999; and HR 1138, The Ratepayer Protection Act, introduced by Rep. Cliff Stearns (R-FL), Mar. 16, 1999. Earlier efforts to repeal the law, made in the 104th Congress of 1995, were unsuccessful. S. 708, Electric Utility Ratepayer Act, 104th Congress, 1st sess., introduced by Sen. Don Nickles (R-OK), Apr. 6, 1995; and HR 2562, Ratepayer Protection Act, 104th Congress, 1st sess., introduced by Rep. Cliff Stearns (R-FL) and others, Oct. 31, 1995.

2. See *The Battle Begins*, Newsweek, May 9, 1977, at 22; U.S. House of Representatives, National Energy Act: Report of the Ad Hoc Committee on Energy, 95th Congress, 1st sess., Report No. 95-543, July 27, 1977, vol. 1, at 3; and *Carter Energy Bill Fails to Clear*, CQ Almanac 33 (1977): 709.

3. *Utility Industry Mounts Drive to Scrap Dingell Rate Section in Energy Bill*, Elec. Wk., Sept. 5, 1977, at 1–2.

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11. PURPA, Section 210(b) (1).

12. PURPA, Section 210(b).

13. PURPA, Section 210(d).

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28. In 1992, Southern California Edison's vice president of system planning and operations noted that gas generation cost an average of 3 cents per kWh. *Utility Exec Warns Against Pursuing Renewables Without Regard to Cost*, Elec. Util. Wk., April 13, 1992, at 7. In 1995, James R. Birk, a manager at the Electric Power Research Institute, pointed out that new gas turbines can reduce the cost to 2.5 to 3 cents per kWh. Allen Soast, *Competitive Challenges Looming*, Engineering News-Record, Jan. 30, 1995, at 75.

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30. William A. Brownell, *Electric Utility Deregulation: Analyzing the Prospects for Competitive Generation*, Ann. Rev. of Energy 9 (1984): 232.

31. U.S. House of Representatives, Public Utility Regulatory Policies Act, Subcommittee on Energy and Power of the Committee on Energy and Commerce, 100th Congress, 1st sess., Sept. 10, 22 and 23, 1987, Serial No. 100-113, at 5.

32. Robert J. Keegan, *Power Procurement: Should Competitive Bidding be Required*? in James Plummer and Susan Troppmann, eds., Competition in Electricity: New Markets and New Structures (Arlington, VA: Public Utilities Reports, 1990), at 87.

33. Jan Hamrin, *Pricing a New Generation of Power: A Report on Bidding*, in Plummer, *supra* note 32, at 120.

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35. Richard J. Williams, *In Virginia's Competitive Bidding Laboratory*, Elec. J., Mar. 1990, at 43–44. Also see Michael T. Burr, *Virginia Bidding Rules Proposed*, Indep. Energy 20 (Sept. 1990): 76; and *Proposed Power Bidding Rules for Virginia Draw Favorable Responses*, Inside FERC, Sept. 24, 1990, at 7–8.

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37. Paul L. Joskow, *Regulatory Failure, Regulatory Reform, and Structural Change in the Electrical Power Industry*, Brookings Papers on Econ. Activity: Microeconomics (1989): 177. Examples of the response to bidding requests are also provided in *Major National Role Seen for Independent Power; Bidding to Predominate*, Cogeneration Rep., Sept. 9, 1988, at 11.

38. See statements of FERC commissioners in U.S. House of Representatives, Public Utility Regulatory Policies Act, *supra* note 31.

39. Author's interview of Cheryl Harrington, Principal of Regulatory Assistance Project, former member of the Maine Public Utilities Commission from 1982 to 1991, May 16, 1994.

40. PG&E, 1972 Ann. Rep., at 10.

41. PG&E, 1975 Ann. Rep., at 6; and PG&E, 1977 Ann. Rep., at 2–3.

42. PG&E, 1979 Ann. Rep., at 3 and 14.

43. See *Showdown at Diablo Canyon*, Newsweek, Aug. 10, 1981, at 51–52; George Alexander and Bob Sector, *Diablo Canyon Safe, NRC Unit Says*, Los Angeles Times, Sept. 10, 1981, at I-1; *New Report Asked on Diablo Problems*, Los Angeles Times, Oct. 11, 1981, at I-30.

44. PG&E, 1988 Ann. Rep., at 29–30; and *Ending the Dispute Over Diablo Canyon*, Business Wk., July 11, 1988, at 36.

45. PG&E, 1991 Ann. Rep., at 19.

46. Some critics assailed the accord, noting that while the arrangement employed a market-based principle of pay-for-performance, it still offered regulatory safeguards to utilities. After all, customers paid a high price for power produced from Diablo Canyon—7.8 cents per kWh in 1988—whether they liked it or not. In a truly competitive environment, California customers would not have chosen to buy power from Diablo Canyon at all. Rather, they would have purchased electricity from PURPA QFs, which (according to the California Division of Ratepayer Advocates) sold power in PG&E's service territory for 6.3 cents per kWh, even with the high avoided costs provided by the interim SO4 contracts. Division of Ratepayer Advocates Analysis in "Final Report to the Legislature on Joint CEC/CPUC Hearings on Excess Electrical Generating Capacity (SB 1970)," Publication P150-87-002, June 1988, at 65.

47. California Public Utilities Commission, Decision 90-08-068, Re San Diego Gas and Electric Company, et al., 37 CPUC 2d 346, Aug. 29, 1990; and California Public Utilities Commission, Decision 90-12-071, Re San Diego Gas and Electric Company, et al., 38 CPUC 2d 507, Dec. 19, 1990. See also Natural Resources Defense Council and Pacific Gas and Electric, *Energy Efficiency in the National Energy Strategy: NRDC and PG&E Find Common Ground*, Elec. J., Oct. 1990, at 47.

48. Pauline Yoshihashi, *San Diego G&E To File for Performance Based Rate Setting*, Dow Jones News Wire, Oct. 16, 1992, from Dow Jones News Retrieval.

49. Jeff Pelline, *PG&E Offers Deal to Freeze Rates; PUC Would Have to Change its Rules*, San Francisco Chronicle, March 18, 1994, at B1.

50. *Mass. Attorney General Recommends Performance-Based Rate Structure*, Elec. Util. Wk., Nov. 14, 1994, at 13.

51. *Miss. Lawmakers Seen Likely to Okay Performance-Based Rate Plan Again*, Elec. Util. Wk., May 21, 1990, at 10; and *New Performance Evaluation Plan Filed at PSC by Mississippi Power*, Elec. Util. Wk., Aug. 23, 1993, at 9.

52. I examine the significance of PURPA in greater detail in my forthcoming book, Power Loss: The Origins of Deregulation and Restructuring in the American Electric Utility System (Cambridge, MA: MIT Press, 1999). By July 1999, 20 legislatures had passed laws that allowed for increased competition and reduced regulatory oversight by state commissions. Three other states had their utility industry restructured through comprehensively revised regulatory orders. U.S. Department of Energy, Status of State Electric Utility Deregulation Activity as of July 1, 1999, accessed on-line at http://www.eia.doe.gov/cneaf/ electricity/chg_str/tab5rev.html, on July 30, 1999.

53. The members of the PURPA Reform Group are Central Maine Power Company, Duke Energy, Edison Electric Institute, Florida Progress Corp., GPU Inc., New York State Electric & Gas, Niagara Mohawk, Puget Sound Energy, and San Diego Gas & Electric. See the group's Web site at http://www.purpareform.org (accessed on Apr. 28, 1999) for more information.

54. U.S. Department of Energy, Energy Information Administration, The Restructuring of the Electric Utility Industry, 1996, at http://www.eia.doe.gov/cneaf/electricity/chg_str/brochure/repeal.html, accessed Apr. 28, 1999.

55. American Wind Energy Association, The Renewables Portfolio Standard: How It Works and Why It's Needed, Oct. 1997, at http://www.awea.org/policy/rpsbrief.html, accessed Apr. 28, 1999.

56. S.687, Electric System Public Benefits Protection Act of 1997, introduced by Sen. James Jeffords (R-VT) on May 1, 1997.

57. S.2287, Comprehensive Electricity Competition Act, introduced by Sen. Frank Murkowski (R-AK) on July 10, 1998.

