Responsible Power Marketing in an Increasingly Competitive Era

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If you [electric utilities] will bring your price down to a point where you can compel the manufacturer to shut down his private plant because he will save money by doing so; if you can compel the street railway to shut down its generating plant; if you can compel the city waterworks, whether privately or publicly owned, to shut down its power plant because of the price you quote—then you will begin to realize the possibilities of this business, and these possibilities may exceed your wildest dreams.

Samuel Insull, 1910

Samuel Insull’s career ended in financial ruin, but echoes of his rallying cry still resound in utility boardrooms throughout North America. The energy landscape is marked by surpluses of electrical generating capacity and growing competition for power sales. Marketing strategy has become one of the industry’s paramount concerns.

Power system executives who worried until only a few years ago about prospects for too much demand now fear that they may be attracting too little. Hard won institutional expertise in managing and reducing a system’s electricity needs is widely unappreciated.

The electric company faces competition from many quarters: the gas company, the wood purveyor, the industrial self-generator, the independent power producer. The challenge for electric utilities is to minimize the cost of the energy services that they provide, while at the same time keeping their shareholders happy and coping with harbingers of deregulation. To many, the answer lies in strategies for encouraging more electricity consumption in order to permit fuller use of the industry’s generating capacity.

But winning in the markets for energy services is not synonymous with prodding customers to use more kilowatt-hours. Indeed, the two goals ultimately conflict whenever the promotional strategies preempt inexpensive energy conservation measures and accelerate additions of costly generating capacity.

1. S. INSULL, Sell Your Product at a Price Which Will Enable You to Get a Monopoly (address delivered Jan. 6, 1910), in CENTRAL STATION ELECTRIC SERVICE 116–17 (1915).
2. For a vivid account of Insull’s fiscal misadventures and his flight to Europe, “broke and broken,” at age 74, see R. MUNSON, THE POWER MAKERS 70 (1985).
3. By “energy services,” I mean the heat, light, mechanical drive, and other benefits that kilowatt-hours produce. There is, of course, no demand for electricity independent of the services that it provides.
4. Such strategies typically focus on baseload capacity, which consists of generators that are relatively inexpensive to operate, like nuclear and coal-fired power plants. When utilities can operate such units at maximum capacity, they can spread the plants’ relatively high fixed costs over the maximum possible kilowatt-hour sales, minimizing rates to customers. In an era of low fossil fuel prices, even gas- and oil-fired plants may become attractive potential sources of increased sales. Policies designed to expand power consumption should be distinguished from traditional “load management” programs, which attempt to change the timing of consumption—generally with an eye to avoiding peak periods—without affecting how much electricity is used for a particular purpose.
capacity. The interests of shareholders and customers alike counsel a search for alternative solutions.

That investigation begins, for the purposes of this Article, with the recognition that delivering more energy services is not synonymous with selling more energy. Opportunities abound for more efficient use of electric power.\(^5\) In fact, electricity frequently can be conserved much more cheaply than utilities can produce it, but potent market barriers leave much of this potential unrealized.

Utilities have used cash payments to customers to attack these market barriers; managers increasingly turn to efficiency investments as an alternative to financing new generators when additional capacity is needed. In other words, rather than buying a new power plant, some utilities pay customers to improve the efficiency of electricity-using buildings, appliances, and industrial processes, allowing fewer kilowatt-hours to deliver equivalent or superior services.\(^6\)

Capacity surpluses, however, motivate utilities to leave such options for another day. Emphasis shifts to policies designed to increase electricity consumption, which reinforce constraints on conservation and may result in irreversible losses of inexpensive efficiency options. As explained at length below, this course is inimical to both utilities' and society's interests.

The search for a different approach proceeds from a discussion of the utility industry's competitive dilemma and the growing attraction of "least-cost" principles for allocating utility investment among alternative means of producing power and increasing the efficiency of its consumption. Subsequent Parts of this Article explore the marketing advantages of efficiency strategies, obstacles to realizing those advantages, and some of the dangers associated with policies that promote increased electricity use. This analysis yields a number of guidelines and incentives for responsible power marketing, whose application is demonstrated in illustrations drawn from recent regulatory proceedings.

I. Origins of a Competitive Dilemma

For most of this century, North American utilities have functioned as construction companies on a gigantic scale. Each was initially awarded an exclusive franchise to build the generating equipment and delivery systems

\(^5\) Throughout the Article, "conservation measures" and "efficiency improvements" are used interchangeably to denote technologies that reduce the amount of electricity needed to deliver a given energy service—e.g., heating, cooling, lighting, and mechanical drive.

\(^6\) For descriptions of some of these investments, see infra text accompanying notes 18-20. Conservation investment can be as profitable to utilities as the commitment of equivalent funds to generation; see infra text accompanying notes 21-22.
needed for producing and selling electricity. Natural monopoly considerations were dispositive in decisions to grant these franchises; economies of scale were clearly evident in both the production and the distribution of power. Profit was strictly controlled, sometimes through public ownership of the utility itself, but more often through state regulation of privately owned companies.\textsuperscript{7}

By the late 1980s, thirty-year veterans of the North American utility industry could identify three distinct eras in their careers. They spent the 1960s in what some now characterize as a "Golden Age," in which they promoted power consumption and steadily expanded their generating capacity, secure in the knowledge that production costs would fall as the inventory of power plants expanded.\textsuperscript{8} By contrast, the 1970s were dominated by warnings about future shortages and struggles to finish increasingly costly power plants, whose owners worried that demand for kilowatt-hours would soon outstrip supply.\textsuperscript{9} Utility executives who persevered into the 1980s found themselves proclaiming surpluses, cancelling power plants, promoting electricity consumption, and battling competitors, even as they predicted shortages in the 1990s as a consequence of their inability to complete power plants.\textsuperscript{10}

Much of this turmoil reflected technological changes that have transformed the electricity business. On the generation side, reductions in the size and construction periods of new power plants reinforced skepticism about the mainstays of utilities' construction programs, which were giant coal-fired and nuclear facilities requiring a decade or more to complete.\textsuperscript{11}

\textsuperscript{7} For a useful overview of the current regulatory system, see Joskow & Schmalensee, Incentive Regulation for Electric Utilities, 4 \textit{Yale J. on Reg.} 1, 2-8 (1986).

\textsuperscript{8} The "Golden Age" is recalled in M. Ziering, Risk, Return and Ratemaking 7-14, Cal. Pub. Util. Comm'n, Order Instituting Rulemaking No. 86-10-001, app. B (Oct. 1, 1986); R. Munson, supra note 2, at 103-17.

\textsuperscript{9} See Cavanagh, Electrical Energy Futures, 14 Env'tl. L. 133, 136-38 (1983), and sources cited therein.


\textsuperscript{11} See R. Sant, D. Barke & R. Naille, Creating Abundance: America's Least-Cost Energy Strategy 134 (1984) ("centrally generated electricity at current prices is already uncompetitive in several energy service markets . . . [and] is in many cases losing to conservation technologies, cogeneration and other decentralized sources of electric generation"); \textit{Office of Technology Assessment, New Electric Power Technologies: Problems and Prospects for the 1990s} 19-25 (1985) (concluding that "[a] number of developing technologies for electric power production and distribution show promise of being able to provide energy competitively and reliably with low levels of pollution and high degrees of reliability")
Rapidly changing interest rates and energy consumption trends put a premium on resource options that allowed for modular construction and flexible scheduling. Jurisdictions as diverse as California, Idaho, and Maine made small scale power production an increasingly dominant part of their energy futures.

At the same time, opportunities for improving the efficiency of energy use expanded rapidly. Given the wealth of options for delivering more services with less power, indefinite growth in electricity consumption was no longer assured.

All these developments helped force the cancellation of nearly 200 utility-sponsored coal and nuclear power plants, with accompanying losses in the tens of billions of dollars. Many other plants were completed in anticipation of demand that did not materialize on schedule.

Some legislatures are beginning to show considerable promise as future electric supply options, including small scale atmospheric fluidized-bed combustion plants, wind turbines, fuel cells, and photovoltaics.

12. See, e.g., 1 NORTHWEST POWER PLANNING COUNCIL, NORTHWEST CONSERVATION AND ELECTRIC POWER PLAN 3-1 (1983) [hereinafter NORTHWEST 1983 PLAN] (emphasizing importance in modern electricity planning of "flexible resources and conservation programs that can be modified to meet changing demands for electricity").


15. For a review of more than $20 billion in losses to 115 abandoned nuclear power plants between 1972 and 1984, see Cavanagh, Least-Cost Planning Imperatives for Electric Utilities and Their Regulators, 10 HARV. ENVTL. L. REV. 299, 302 & n.11 (1986), and sources cited therein. Over that same period, some 75 coal-fired plants were also cancelled. WORLDWATCH INST., STATE OF THE WORLD—1986, at 100 (1986). Analyst Charles Komanoff has released a much higher estimate of net nuclear losses, including $30 billion in abandoned plant and $70 billion in life-cycle cost overruns on completed plants. Wald, The Nuclear Industry: A Potential $100 Billion Burden, Oregonian, Feb. 2, 1988, at 7, col. 1.

16. See OFFICE OF ECONOMIC POLICY, FED. ENERGY REGULATORY COMM’N, REGULATING INDEPENDENT POWER PRODUCERS: A POLICY ANALYSIS 21 n.34 (1987) (citing U.S. Department of Energy studies indicating that "[f]or the Nation, reserve margin has been above 30% since the mid-1970s, significantly above the historic 20% rule-of-thumb margin for adequate reserves"); R. MUNSON, supra note 2, at 5-6 (from 1973 to 1983, utilities cancelled more than 150 plants but still increased generating capacity by 50% over a period when demand grew by only 20%); U.S. ENERGY INFORMATION ADMIN., ANNUAL OUTLOOK FOR U.S. ELECTRIC POWER 1987 5 (from 1980 to 1985, net U.S. generating capacity increased by 2.5% annually while annual growth rate for utility sales was only 2.1%; coal-fired and nuclear power plants accounted for nearly all of 78,000 Megawatts of generation are beginning to show considerable promise as future electric supply options," including small scale atmospheric fluidized-bed combustion plants, wind turbines, fuel cells, and photovoltaics).
latures and regulators responded by insisting that future proposals for new large scale power plants must be weighed against less costly alternatives. Among those alternatives were improvements in the efficiency of electricity-consuming buildings and machines, which increasingly emerged not only as ways for consumers to save money, but also as sources of power for utility systems.

With savings opportunities on the order of 65% to 95% for many energy services, conservation programs became an attractive substitute for new generators in providing the kilowatt-hours needed by new families and businesses. Utilities in California and the Pacific Northwest were spending almost half a billion dollars annually on such programs in the mid-1980s, and by 1986 their regulators had established savings targets exceeding the peak power production of eighteen 1000 Megawatt power plants. A national survey in 1987 determined that “[b]etween one-third and one-half [of] the utilities in the country are now offering energy efficiency rebate programs,” which provided ratepayer-funded cash rewards for customers who made efforts to save electricity.

The regulatory community also increasingly recognized that, in the words of the Wisconsin Public Service Commission, “it is important to new capacity). New England is a prominent exception to generalizations about capacity surpluses. See, e.g., Tye, Energy Crunch Highlighted Need for Conservation Plans, Boston Globe, Jan. 16, 1988, at 1, col. 2.


20. Study Finds Increasing Use of Rebate Programs as Utilities Seek Alternatives to Generation, ENERGY CONSERVATION DIG., Jan. 4, 1988, at 1 (summarizing survey published by Electric Power Research Inst.).
treat direct utility investment in conservation in a manner similar to other utility assets.\textsuperscript{21} To the Wisconsin Commission and several of its counterparts, this meant that utilities should be permitted to earn a profit on prudent conservation expenditures.\textsuperscript{22} If conservation was to compete on equal terms with power generation for utilities' investment dollars, utilities' shareholders needed an opportunity to earn a fair return in the process.

Such a competition implies a practicable means of comparing the lifecycle costs of conservation and generation options. A "least-cost planning" label is frequently applied to a cluster of methods for performing these comparisons and integrating the results into resource acquisition schedules. By 1987, utilities and regulators in thirty-seven states were embarking on efforts to minimize the long term costs of reliable electricity service, to credit comparative advantages of scale and lead time when evaluating candidates for utility investment, and to defer new generators until utilities had explored less expensive conservation opportunities.\textsuperscript{23} The planner's challenge was no longer to fit large generators to a forecast of inexorably growing demand, but rather to develop more flexible resource portfolios and manage power needs instead of simply trying to predict them. Initial results were dramatic; the nation's first officially adopted least-cost plan indefinitely deferred all new large scale generators in a region that earlier had launched one of the world's most ambitious nuclear power plant construction programs.\textsuperscript{24}


\textsuperscript{22} The profit is awarded by adding such investments to a utility's rate base, from which returns to shareholders are calculated. Wisconsin and Washington State have taken the further step of awarding a higher rate of return for utilities' conservation investments. See Wisconsin Pub. Serv. Comm'n, Opinion and Order No. 6630-UR-100 (Dec. 30, 1986) ("performance incentive of 1% additional return on capitalized conservation expenditures for each 125 Megawatts of load that is saved at a cost of less than $200 per kilowatt plus 2 cents per kilowatt-hour"); \textit{Wash. Rev. Code Ann.} § 80.28.025 (West 1962 & Supp. 1988) (eligibility of conservation investments for two percentage point addition to otherwise applicable rate of return).

\textsuperscript{23} These methods are described in greater detail in Cavanagh, \textit{supra} note 15, at 322-24, 330-42; \textit{1 NorthWest 1986 Plan}, \textit{supra} note 19, at 3-1 to 3-7; Wellinghoff & Mitchell, \textit{supra} note 17, at 19-20. According to a recent Energy Conservation Coalition study, "37 states have undertaken 61 different actions—either through legislation, regulation or studies—to explore and/or promote least-cost electrical planning . . . over the 18 month period from January 1986 to June 1987." \textit{Energy Conservation Coalition, A Brighter Future: State Actions in Least-Cost Electrical Planning} 1 (1987). Within that group, "twenty-three state regulatory commissions were engaged in either examining or initiating least-cost planning," "twelve state legislatures introduced and/or passed least-cost planning bills and resolutions," and "six states released studies which recommend that utilities prepare least-cost resource plans to be submitted to the appropriate state regulatory agency." \textit{Id.}

\textsuperscript{24} The plan was developed by the Northwest Power Planning Council for Idaho, Montana,
Least-cost planning was introduced at a time of institutional and legal upheaval. In the decade following passage of the Public Utility Regulatory Policies Act of 1978 (PURPA), federal and state regulators invited a host of independent producers to challenge utilities' monopoly over power production. High construction costs for utilities' own generators created pressure for rate increases, which were particularly untimely in light of OPEC's inability to sustain high prices for competing fuels. Many electricity customers threatened to replace the local utility as their supplier of energy services by turning instead to self-generation, other power producers, or substitute fuels.

Utilities have responded to these competitive pressures by trying to convince customers to use more of their product. One strategy involves so-called "declining block rates," which reward increased use with progressively lower charges per kilowatt-hour consumed. Alternatively, customers may simply be offered discounts from current rate schedules.


26. Under PURPA, the Federal Energy Regulatory Commission has assured private investors in specified generating technologies a right to sell electricity to their local utilities at whatever price those utilities would have had to pay to generate an equivalent amount of electricity themselves. See 16 U.S.C. § 824a-3 (1982); 18 C.F.R. § 292.304(b)(2)-(b)(4) (1987). Among the results are the numerous small scale generators cited supra at note 13. Recent trends in PURPA implementation have included an emphasis on auctions in which independent power producers bid against each other for contracts to supply specified amounts of power to utilities. See, e.g., M. ROTHKOPF, E. KAHN, T. TEISBERG, J. ETO & J. NATAF, DESIGNING PURPA POWER PURCHASE AUCTIONS: THEORY AND PRACTICE (Lawrence Berkeley Laboratory 1987).


28. This can be achieved either by charging a lower rate for kilowatt-hours consumed above a certain threshold or by combining high service charges with a flat rate structure.

29. Regulators, who normally frown on price adjustments of this kind, are sometimes persuaded that they advance other ratepayers' interests without constituting "undue discrimination." As long as the lower rates include some contribution to meeting the system's fixed costs, other utility customers receive near term rate benefits. See, e.g., ILLINOIS COMMERCE COMM'N, ISSUE PAPER: THE IMPACT OF ECONOMIC DEVELOPMENT/INCENTIVE UTILITY RATES ON ILLINOIS BUSINESSES—WITH SPECIAL EMPHASIS ON THE SMALL BUSINESS PERSPECTIVE 13 (1987); Or. Pub. Util. Comm'n, Order No. 67-402, at 10 (Mar. 31, 1987) (rate discounts "must . . . benefit other customers by maximizing contribution to fixed costs from customers receiving the discount").
year contracts may be involved, along with pledges by customers not to install their own generating equipment. But such strategies are not the most effective ways to capture and hold energy service markets, and they carry both economic and environmental risks. The following discussion responds to arguments for promotional policies and urges a realignment of some misplaced regulatory incentives that impel utilities to act against their stockholders' and customers' best interests.

II. Reconciling Energy Conservation and Capacity Surpluses

Many utility executives and academics frame the industry's current dilemma in roughly the following illustrative terms: consider a company selling power at eight cents per kilowatt-hour (reflecting average system costs), while one of its coal-fired power plants is running well below capacity despite operating costs of only about two cents per kilowatt-hour (the much higher fixed costs are sunk). Surely free market logic calls for efforts to place that plant at the service of new sources of electricity consumption by offering rates per kilowatt-hour that are much closer to two cents than eight cents. The utility's profits will increase, the argument goes, other customers will get rate relief, and society will realize greater economic efficiency in the consumption of electricity services.

On the other hand, if the utility does not change its pricing policies, it risks eliciting excessive consumer investment in energy-saving technologies since rates are providing false signals about the cost of serving additional consumption. For the company to go further and invest scarce capital in conservation programs would exacerbate the problem, to the particular disadvantage of customers who did not participate in the programs.

These inferences are appealing, plausible, and wrong. They reflect unrealistic views of how energy markets function, and they overlook the most promising strategies for improving utilities' and consumers' fiscal welfare.

30. See, e.g., Supplemental Agreement Between Pacific Power & Light Co. and Boise Cascade Corporation, Oct. 31, 1986 (Late-Filed Exhibit No. 2, Mont. Pub. Serv. Comm'n No. 86.12.76) (ten-year rate discount conditioned on recipient's pledge to forego construction of on-site generating facilities); BONNEVILLE POWER ADMIN., A FINAL REPORT ON THE BONNEVILLE PARTNERSHIP 9 (1987) (describing seven-year "rate stability" contracts); Western Area Power Admin., Economic Development, CONSERVATION & RENEWABLE ENERGY BULL. 6, 7 (1986) (North Dakota utility offers rate discounts "guaranteed for ten years, giving large electrical users time to plan").

31. North America's extensive power surpluses are discussed supra at note 16.

32. Economist Jim Lazar has argued persuasively that such analyses grossly understate the true operating costs of coal-fired units, including but not limited to environmental impacts and costs associated with wear and tear on equipment that has a limited lifetime and steadily escalating replacement costs. See J. Lazar, Should Utility Conservation Efforts Continue During a Surplus? 13 (May 3, 1984) (unpublished manuscript on file with author).
To see why, it is important first to review some basic principles of electricity regulation.

A. Decoupling Utility Profits from Sales Volumes

Profits from electricity sales are supposed to reflect regulators' decisions about appropriate returns on prudently invested capital. The regulatory commission determines how much revenue the utility needs in order to earn this return and recoup its operating expenses, and divides this amount by projected sales. The result is the rate per kilowatt-hour that is used to calculate an electric bill. The exercise captured in this oversimplified description is repeated intermittently to accommodate changing costs and circumstances.

Actual returns on utilities' investments may differ from the sums authorized in the rate-setting process. Among other things, the regulators' assumptions about electricity sales become crucial here; if sales drop below the forecast, both gross and net revenues will lag also. Conversely, if sales can be stimulated beyond the regulators' expectations, the shareholders will receive a windfall. The regulators could respond by cutting rates of return at some future date, but that would simply set in motion a fresh cycle of opportunities to increase net earnings by beating the forecast under the new rates.

If the costs of serving additional consumption exceeded rates per kilowatt-hour, of course, incentives would change and utilities would profit by restraining demand. But this would require rapid escalation of fossil fuel prices or total exhaustion of capacity surpluses on both a utility's own system and those of its neighbors. Otherwise, the immediate cost of procuring an additional kilowatt-hour will generally fall well below the rates at which utilities are permitted to sell it.33

Under conventional rate-of-return regulation, then, short term profit considerations almost uniformly favor increased sales of kilowatt-hours. The relationship is strengthened further when utilities have substantial surpluses of generating capacity that is relatively inexpensive to operate. These incentives explain, at least in part, utilities' periodic campaigns to market power and spur consumption.

But this reward structure is not inviolable. California's experience demonstrates how readily returns to shareholders can be decoupled from electricity sales. The California Public Utilities Commission has developed a mechanism called the Electric Revenue Adjustment Mechanism (ERAM),

33. Rates must recover both capital and operating costs, whereas incremental production incurs few, if any, new capital costs.
through which “[r]evenue differences resulting from the differences between forecast and actual sales are recorded in a balancing account and are periodically recovered from or returned to customers.” As a result, “changes in sales volumes do not affect earnings.” Customers’ rates are adjusted periodically to bring actual profits into balance with the initial regulatory decision.

It is important to emphasize that ERAM does not interfere with utilities’ incentives to reduce expenses; benefits to shareholders from cost-cutting innovations are unaffected by ERAM adjustments. What is removed is “the effect on earnings of sales variations resulting from conservation or weather conditions, for example.” On a year-by-year basis, such unanticipated variations may account for as much as six percent of total sales and can reduce or increase profits by substantial amounts.

The ERAM device does not guarantee utilities a fixed profit regardless of management’s competence. The only new assurance to managers is that profits will not be affected by kilowatt-hour sales, a variable that bears no obvious relationship to successful delivery of cost-effective energy services. After all, “[u]tility customers do not seek [kilowatt-hours] and [kilowatts]; rather, they purchase warmth, hot water, motor power, and other basic services.”

The decision to suspend ERAM for the large industrial class reflected the Commission’s finding that utilities needed additional inducements to preempt such customers’ on-site generation, which was placing upward pressure on other customers’ rates. The decision to suspend ERAM for the large industrial class reflected the Commission’s finding that utilities needed additional inducements to preempt such customers’ on-site generation, which was placing upward pressure on other customers’ rates. The decision to suspend ERAM for the large industrial class reflected the Commission’s finding that utilities needed additional inducements to preempt such customers’ on-site generation, which was placing upward pressure on other customers’ rates. The decision to suspend ERAM for the large industrial class reflected the Commission’s finding that utilities needed additional inducements to preempt such customers’ on-site generation, which was placing upward pressure on other customers’ rates.

See supra notes 18-20 and accompanying text.
Why, then, should society or its regulators want utilities' profits to vary with fluctuations in sales of kilowatt-hours and kilowatts?

The next two sections investigate whether social or at least ratepayer benefits may result from rewarding utilities for stimulating electricity consumption. Clearly, however, there need be no inherent relationship between higher electricity sales and higher utility profits, even when substantial generating capacity is idle. Regulators should make a conscious and informed decision about whether to create such a linkage, rather than letting the result emerge by default.

B. Minimizing Society's Electricity Costs

In the illustration that began this Part, a utility was selling power at rates well above the cost of additional production at its generators. A failure to reduce such rates may appear to create excessive inducements to conserve power, since electricity supplies could be expanded at a modest fraction of the price at which they are being sold.

But high electricity rates do not elicit commensurate conservation investments. "[T]he best available evidence indicates that efficiency does not sell unless it produces real annual returns, in reduced energy costs, on the order of 30–200 percent; this is equivalent to a payback requirement of six months to three years."41 Such findings have been reported for all major categories of electricity consumption, including those in the commercial and industrial sectors.42 By contrast, utilities typically earn less than fifteen percent on invested capital, and a new large scale coal or nuclear power plant cannot even begin generating a marketable product until the conclusion of a ten-to-sixteen year siting and construction period.43

41. Cavanagh, supra note 15, at 318 (citing sources); see also U.S. DEP’T OF ENERGY, ENERGY SECURITY: A REPORT TO THE PRESIDENT OF THE UNITED STATES 107 (1987) (“Consumers typically look for short payback periods—6 months to 2 years—for energy-conserving investments. Yet many such investments will produce energy savings for years, as in the case of an efficient furnace with a useful life of 20 years.”); 2 NORTHWEST 1986 PLAN, supra note 19, at 4–6 to 4–10 (review of discount rates applied by consumers to conservation investments).

42. See Cavanagh, supra note 15, at 318 n.57 (citing sources); ALLIANCE TO SAVE ENERGY, INDUSTRIAL DECISION-MAKING INTERVIEWS: FINDINGS AND RECOMMENDATIONS 20 (Jan. 1987) (prepared for Mich. Electricity Options Study) (large industrial customers require conservation investments to repay their costs in two to three years; "[u]nder tight conditions projects may be funded only if they have a payback of one year or less"); ENERGY BRANCH, CAL. PUB. UTIL. COMM’N, 1984 ENERGY CONSERVATION PROGRAM SUMMARY 6 (1985) (utilities’ “energy auditors have found that their [commercial and industrial sector] customers are reluctant to invest in hardware conservation measures unless the energy savings produce a 100% return within less than two years, and in many cases within six months").

43. See U.S. GEN. ACCOUNTING OFFICE, ANALYSIS OF THE FINANCIAL HEALTH OF THE ELECTRIC UTILITY INDUSTRY 10–13 (1984) (historical overview of electric utility industry’s rates of return); NORTHWEST 1986 PLAN, supra note 19, at 7–11 (120-month siting and construction period for 600 megawatt “generic coal” units); 14 BATTELLE PAC. NORTHWEST LABORATORIES, ASSESSMENT
The disparity in investment criteria for conservation and generation suggests that widely differing discount rates are used in decisions about building generators and buying conservation. Buyers of conservation in the residential, commercial, and industrial sectors apply high discount rates to saved kilowatt-hours, while utilities evaluate future kilowatt-hours from new generators more favorably. Strong elements of rationality underpin the behavior of both groups, but the gap invites low-return investments in power plants that cost-effective conservation could displace. When those investments are made, everyone loses.

Moreover, customers who insist on rapid paybacks from long-lived efficiency measures are imposing a cost limit per conserved kilowatt-hour that falls far below applicable retail electric rates. Most conservation expenses are incurred up-front, while the savings are spread over a period of years or decades. Typical discount rates for conservation imply that costs must be amortized over the initial year or two of savings. Based on findings by the Northwest Power Planning Council, for example, it appears that the average consumer would decline or ignore appliance efficiency measures with twenty-year lifetimes costing less than one cent per kilowatt-hour saved, even if that consumer’s electricity rate were as high as eight cents per kilowatt-hour. Comparable conclusions apply to long-lived industrial measures.

As a result, inexpensive conservation opportunities will pervade utility systems whose rates far exceed the conservation’s cost per kilowatt-hour. Extracting kilowatt-hours from many of these untapped sources is cheaper than operating a typical baseload power plant. Those who see benefits to

44. See, e.g., L. Ruff, The Basic Economics of Utility Least-Cost Planning and Demand-Side Management 58 (Oct. 1987) (unpublished manuscript on file with author) (characterizing industries’ stringent payback requirements as “a rule-of-thumb method for capturing other constraints, costs and risks”); Cavanagh, supra note 15, at 319 (‘decisions about end use efficiencies often are made by developers and landlords who will not be paying the ensuing utility bills’). For their part, utilities are generally allowed a fixed rate of return on “prudent” investment regardless of its nature; as explained in this section, the utilities’ rate of return falls well below consumers’ implicit discount rates for conservation.


46. Hearings before the Mont. Pub. Serv. Comm’n, Pac. Power & Light Co. sched. 5, at 1 (No. 86.12.76) (Feb. 25, 1987) (rate decrease proc.) (testimony of Ralph Cavanagh). The assumed customer discount rate is 65% real, in line with empirical findings reported supra at note 41. This discount rate effectively requires recovery of the conservation’s costs in less than two years. If rates are 8 cents per kilowatt-hour, 20-year savings with life-cycle costs of even 1 cent per kilowatt-hour will not pass muster, because their payback period exceeds the specified interval.

47. See supra note 42 and accompanying text.

48. See, e.g., ROCKY MOUNTAIN INST., supra note 18 (savings costing 0.2 cents per kilowatt-hour or less for lighting, water heating, and space cooling); 2 NORTHWEST 1986 PLAN, supra note...
society in increased consumption of kilowatt-hours from surplus generating capacity should also inquire whether utilities could effect an equivalent expansion of energy services at lower cost by purchasing improvements in end use efficiencies.49

For example, the least expensive ways to increase factory output or space cooling services may involve improving industrial processes or air conditioners rather than running power plants. Such possibilities are not foreclosed by either the existence of idle generating capacity or a substantial disparity between retail electricity rates and the generators' operating costs.

C. Addressing Distributional Concerns

Critics of conservation investment by utilities worry particularly about rate impacts on nonparticipating customers.50 If utilities with capacity surpluses invest in conservation, rates per kilowatt-hour ultimately will have to rise; fixed costs must be recovered over smaller unit sales. Those who did not enroll in the conservation programs would then face higher bills. Even conservation programs costing utilities nothing would have this impact whenever a utility's rates were higher than its marginal operating costs; the lost revenues from reduced power sales would exceed the savings from reduced operating costs.51 Even though system-wide electricity costs would drop substantially, bills would increase for ratepayers with stable or growing demand.

Of course, the same concerns are, or ought to be, raised by the rate discounts that many utilities are introducing in an effort to secure compet-

19, at 5-29 (identifying five major water heat conservation measures that produce savings for less than 1.5 cents per kilowatt-hour).

49. Market barriers to conservation sometimes elicit the response that remedial measures should come from government, not utilities. If cost-effective appliance or building efficiency opportunities are languishing, governments should respond with mandatory standards. Without disputing the merits of such standards, which have proved considerable, their reach is inevitably incomplete. Some electricity uses do not lend themselves to efficiency regulation, while others can be reached only in the teeth of potent anti-regulatory interests. Utilities that try to make market barriers exclusively the regulator's problem risk paying unnecessarily for power plants that could have been displaced more cheaply with conservation investments. Cf. Cavanagh, supra note 9, at 169-71 (reviewing ways that utilities can improve prospects for and success of efficiency regulations).

50. See, e.g., U.S. DEP'T OF ENERGY, THE FUTURE OF ELECTRIC POWER IN AMERICA: ECONOMIC SUPPLY FOR ECONOMIC GROWTH 5-48 (1983) ("When non-participants subsidize efficiency measures taken by participating ratepayers and face increased electric rates as a result, the concern about wealth transfers is heightened.").

51. For example, if rates were 5 cents per kilowatt-hour and operating costs were 4 cents per kilowatt-hour, every kilowatt-hour saved by a conservation program would avoid 4 cents in costs but would also deprive the utility of 5 cents in revenues. The losses in net revenues would have to be recouped from those who did not participate in the program, unless participants made compensatory payments to the utility. Provided, however, that the savings cost less than 4 cents per kilowatt-hour (the utility's operating costs), the system-wide electricity bill would decline.
itive advantages. Rate discounts have the same immediate effect on non-participants as conservation payments; the discounts typically are justified on the ground that nonparticipants would be still worse off if the recipients withheld or reduced their purchases. Yet that same rationale argues at least as strongly for conservation payments. Customers who invest in efficiency improvements, with their utilities' help, are likely to prove more reliable revenue sources than customers who secure comparable reductions in energy bills through rate discounts. As a utility customer lowers its energy needs, it becomes a less tempting target for the utility's competitors.\(^5\)

Other aspects of the debate over nonparticipant equity and conservation will not be explored at length here. I have argued elsewhere that if utility-financed incentives to install cost-effective efficiency improvements are substantial, and if marketing efforts focus on traditional nonparticipants, utilities can buy energy savings without disadvantaging any class of customers.\(^6\)

It remains troubling, moreover, that those who challenge conservation on distributional grounds seldom apply the same criteria to power plant investment. This selective approach has been justified on the ground that all ratepayers are "participants" in the electricity demand that necessitates power plant construction, so that all should share in the resulting costs.\(^7\)

But customers differ significantly in their ability to avoid those costs, and here the market barriers to conservation take on a new and harsh significance. Access to the capital and knowledge needed to improve building and equipment efficiencies or to switch fuels is hardly independent of wealth. For the indigent, the options for escaping new power plant costs typically involve increasingly painful ways to do without energy services. Analogous complaints can be raised by those who depend on fixed electricity-intensive equipment for their livelihoods or their comfort. Such

\(^{52}\) These competitors have the most to gain by courting relatively inefficient electricity consumers, who can be expected to purchase relatively high volumes of the competitors' fuels. By the same token, such consumers have the most compelling incentives to acquire and exploit fuel-switching capabilities in an increasingly competitive market. Cf. supra notes 10 & 27. Highly efficient electricity users have much less to gain by turning to other energy suppliers when rates change.

\(^{53}\) Cavanagh, supra note 15, at 325-27. For an example of a county-wide project that met and exceeded these distributional objectives, see E. Hirst, The Hood River Conservation Project: Comprehensive Report ix (1987) (utility-financed program insulated most of Oregon county's 3500 electrically-heated dwellings, including rental and low income units, and "[n]onparticipants had higher incomes and newer homes than did participants."). Participation in the Hood River project involved the inconvenience and household disruption attending replacement of windows and extensive insulation of floors, attics, and walls. In the residential conservation sector, it is difficult to conceive of measures creating a greater marketing challenge.

\(^{54}\) B. Reddy, supra note 44, app. at 7.
ratepayers are at a relative disadvantage in the system-wide competition to avoid higher power bills associated with additional generators.\(^5\)

There is no principled basis for distinguishing these issues from the distributional concerns raised by critics of utilities' conservation investments. Neither power plant nor conservation investments are invulnerable to claims of inequity; both may add to society's energy bill, and some individuals will be more successful than others at escaping the ensuing pain. Cost-effective conservation programs have the advantage of inflicting less pain in aggregate,\(^6\) and utilities' conservation payments reach a broader cross section of society than do payments for the construction and operation of power plants.\(^7\) From 1984 to 1986, for example, California utilities financed conservation measures in more than 63,000 businesses and 1.5 million households; almost one-fifth of the households were classified as "low income."\(^8\) So too, as Part III will explain, all ratepayers "participate" in important system-wide benefits of conservation, regardless of their involvement with individual measures.

III. Dangers of Promotional Policies

Although shareholders and ratepayers alike can profit from utilities' conservation investments, even when rates substantially exceed the operating costs of underutilized power plants, it is nonetheless clear that many North American utilities with surplus capacity have reached quite different conclusions. Moreover, few if any regulators have followed California's lead in breaking the linkage between near term profits and kilowatt-hour sales. There are several urgent reasons to change this course.

55. I am indebted for this insight to Thomas Foley of the Northwest Power Planning Council.
56. The term "cost-effective" is used in the least-cost planning sense to refer to savings that cost the utility system less than an equivalent amount of generation.
57. See Bonneville Power Admin., Employment Effects of Electric Energy Conservation 2 (1984) ("The literature generally concludes that expenditures on conservation generate more regional employment opportunities than expenditures of the same size on power plant construction and operation.").
A. Lost Conservation Opportunities

Many decisions about energy efficiency are essentially irreversible over the lifetime of the building or machine to which they apply. The difference between average and high efficiencies is a block of generation that constitutes an electric power resource. The Northwest Power Planning Council, chartered by Congress with regional least-cost planning responsibilities, has coined the term "lost-opportunity resource" to identify cost-effective resources that would lose their cost-effectiveness if not developed or maintained now or in the near term. Consequently, their savings could be lost forever. A primary example of such a lost-opportunity resource is the energy efficiency of new buildings. Since many energy-saving measures cannot be installed cost-effectively later, buildings constructed without these measures will continue consuming energy inefficiently long after the surplus of generating capacity is over.

Other examples involve long-lived appliances, furnaces, and industrial processes. In setting priorities for conservation investment, utilities should distinguish between irreversible decisions with consequences stretching beyond projected capacity surpluses, and short term or deferrable actions. The latter category includes installation of measures such as water heater wraps and light bulb replacements, whose potential savings are not preempted by delay.

Promotional policies lead to lost conservation opportunities in two ways. The most visible is the reduced economic reward for efficiency that results from the new rates and rate structures; when consumption becomes cheaper at the margin, conservation becomes correspondingly less attractive to the consumer. At least equally important is the increased uncertainty about long term returns from conservation investment that such policies introduce. Under fluctuating rate structures, it is very difficult for customers to predict whether and how soon their efficiency investments will be attractive if the savings cost less than other supply options.

59. New houses have an average lifetime of at least 70 years; even mobile homes can be expected to last more than 40 years. See 2 NORTHWEST 1986 PLAN, supra note 19, at 5–14. For the industrial sector, by way of illustration, none of the Pacific Northwest’s 3000 Megawatts of aluminum manufacturing demand was less than 17 years old in 1988, and nearly one-third of it was more than 45 years old. NATURAL RESOURCES DEFENSE COUNCIL, CHOOSING AN ELECTRICAL ENERGY FUTURE FOR THE PACIFIC NORTHWEST: AN ALTERNATIVE SCENARIO 82 (1977).


61. For utilities in immediate need of energy or capacity, of course, measures in both categories will be attractive if the savings cost less than other supply options.

62. The impact of the shift in price signals is muted to a considerable extent, of course, by the numerous market barriers reviewed supra at text accompanying notes 41–49.
will be profitable. The uncertainty provides effective reinforcement of the fast payback constraint described above.

In all of these respects, promotional policies generally do not discriminate between reversible and irreversible consumption decisions. Even if such policies are sharply limited in duration, they can influence decisions that will reverberate far beyond the policies' termination date. By increasing the market barriers to "lost-opportunity" efficiency investment, "temporary" rate discounts threaten to create long term consequences that will outlast predicted surpluses. Absent some compensatory strategy, cost-effective conservation resources will disappear.

B. Increased Volatility of Revenues and Demand

Modern utility planners are properly troubled by uncertainty about future power sales and revenues. They are all too familiar with jests about how difficult it is to predict anything, particularly the future. Power plant investments are committed up to a decade in advance of predicted need, and the costs of error in anticipating energy demand have frequently run into the billions of dollars.

Enter promotional policies, targeted at the system's most price-responsive consumption and designed to recruit growth that would not occur at rates reflecting system average costs, let alone the higher costs of new capacity. Such rates will reduce rewards for efficiency investments in the machines and buildings that produce the additional consumption. The result is greater uncertainty about future revenues and resource needs, which imposes costs that are unlikely to appear in analyses supporting the promotional policies.

These costs could be avoided if utilities were able to assume that any loads they recruited would not outlive the term of marketing programs. Given their legal obligations to serve all applicants, however, utilities cannot simply ignore the possible permanence of load growth associated with promotional programs. Accordingly, successful programs can be expected to affect resource planning and investment, diverting more dollars into new long term power supply. Program sponsors then become vulnerable to recurrences of their worst nightmare: customers are lured into

63. But see infra Appendix A for one solution to this problem.
64. See supra text accompanying notes 11-16.
65. Utility rates reflect an average of costs for all generating resources on the system. Costs of new generating resources typically exceed that average substantially. As a result, electricity consumption that is uneconomical under current rates would be even less economical under rates that reflected the cost of replacing or supplementing existing capacity.
67. Section IV.A infra proposes a way of avoiding these impacts on the resource planning process.
heavy use by promotional rates, only to cut back or depart just as the bill comes due for the costly new resources built in anticipation of sustained heavy use. With influential institutions already calling for new generating capacity to meet needs extrapolated from recent demand increases, this prospect is neither distant nor speculative.  

On the other hand, one of the strongest justifications for sustaining conservation programs during surplus periods is their contribution to reducing uncertainty about future system needs. As the California Public Utilities Commission and Energy Commission recently determined in a joint report:

[U]ncertainty can be lessened through increasing energy efficiency . . . [T]he uncertainty introduced by uncertain economic growth projections—such as amount of commercial floor space—can be reduced by lowering per unit consumption by using more efficient appliances and designing more efficient buildings. . . . [Regulators] should consider this when developing building and appliance standards and setting utility funding for demand-side management programs.  

A recent University of Southern California study evaluated these benefits for the Bonneville Power Administration’s system and concluded that widespread improvements in the efficiency of new buildings offer the prospect, over the next two decades, of “24% less uncertainty” about loads and “a 22% reduction in rate uncertainty.” To the extent that capacity surpluses lead utilities to abandon or defer conservation programs, the loss of such contributions exacerbates the uncertainty problems described above.

C. Lost Marketing Opportunities

If there is a case for making fuller use of a system’s generating capacity, it does not necessarily follow that the best uses will be homegrown. When utilities decide to subsidize electric water heaters or to sign multi-year


69. CALIFORNIA ENERGY COMM’N, CAL. PUB. UTIL. COMM’N, REPORT TO THE LEGISLATURE ON JOINT CEC/CPUC HEARINGS ON EXCESS GENERATING CAPACITY II-7 to II-8 (1987). “Demand-side management programs” refers to utility efforts to influence customers’ power use, including the energy conservation initiatives described supra at text accompanying notes 18-20.

industrial discount contracts, they may be overlooking competing opportunities for multi-year export transactions in wholesale power markets.

These markets have absorbed an increasing proportion of power sales in recent years. Indeed, transfers between utilities grew three times faster than total electricity production between 1945 and 1980, and accounted for about thirty percent of all power sales by 1987. 71 But interutility transmission systems are dominated by spot market transactions of relatively low value. Capacity surpluses offer the option of supplementing or replacing some of those transactions with longer term commitments, which return greater rewards to buyer and seller alike. Conversely, kilowatt-hours and kilowatts absorbed by a promotional program are unavailable for wholesale transfers.

Regulators and utilities alike should scrutinize this tradeoff more closely, particularly since promotional programs are often justified on the basis of anticipated benefits for other ratepayers on the promoter’s system. Those ratepayers are ill-served by a two- or three-cent per kilowatt-hour promotional sale that forecloses a four- or five-cent intersystem transaction.

One obvious response is that higher prices on wholesale markets require long term commitments, creating additional risks for the seller’s ratepayers. Surpluses may disappear more rapidly than forecasts indicate, rendering the initial commitment unprofitable but no less binding.

Yet many promotional commitments carry multi-year rate guarantees, and, as indicated above, those that do not can nonetheless influence consumption decisions with long term consequences. Unless a promotional program is carefully designed to avoid extended impacts, it carries the same risks as those associated with long term wholesale transactions. Consumption that was profitable when marginal costs were low may become a losing proposition if expensive new generating capacity is constructed, and utilities cannot change pricing rules to avoid the loss. 72

Moreover, in the case of wholesale power transfers, least-cost planning


72. Once discounts have expired, recipients revert to the status of ordinary customers and are entitled to the average-cost rates that others pay. I am aware of no basis in the law of rate regulation that allows for converting discounts into surcharges in order to recover costs of new capacity from beneficiaries of promotional policies, or to test the willingness of customers to pay for such capacity. These customers would doubtless contend that all ratepayers shared responsibility for the system-wide demand that was prompting the capacity additions. Cf. supra text accompanying note 54.
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techniques create valuable insurance against losses. Export contracts can provide funding for developing the seller's conservation resources in advance of domestic needs, and numerous alternatives to new generators are available for ensuring that surpluses can be sustained over the term of a contract.\(^7\) For reasons already explored, partial reinvestment of export revenues in domestic conservation should reduce uncertainty about future system needs, which means that unpleasant surprises from eroding surpluses will be less likely. By contrast, promotional policies tend to increase those uncertainties.

An instructive illustration, in terms of both risk and return, emerges from two recent sales of roughly equivalent quantities of surplus electricity, both involving the same western supplier. In January 1987, the Bonneville Power Administration (BPA) offered 438,000 megawatt-hours of power for short term sale to utilities that could stimulate consumption increases on their systems. The price averaged less than 1.5 cents per kilowatt-hour.\(^4\) At least one recipient of this discounted electricity used it to encourage permanent installations of electric heat, which the power system will be obliged to serve for a period substantially exceeding the six-month duration of the discount.\(^7\)

A year later, BPA negotiated a firm sale of comparable size to three southern California cities, which will extend over twenty years in the event that surpluses persist that long. However, BPA will build no new generators to support the sale; it will rely instead on existing surpluses and conservation investment.\(^7\) The price was 3.4 cents per kilowatt-hour for the first year, escalating at 6% or more thereafter.\(^7\) The initial price disparity between the two transactions adds up to about $2 million per year for every 100,000 megawatt-hours of sales—and that quantity represents less than one percent of current energy surpluses in BPA's region.\(^7\)

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75. See Memorandum to Richland (Wash.) City Council from Staff Re: Residential Customer Credits for Electric Conversion (Feb. 17, 1987) (on file with author).

76. See Bonneville Power Admin., Surplus Marketing Update: Power Sales and Exchanges With Southern California Municipal Utilities (Jan. 5, 1988) [hereinafter Surplus Marketing Update] (unpublished manuscript on file with author). The role of conservation in sustaining such transactions is described in an earlier BPA analysis. OFFICE OF POWER & RESOURCES MANAGEMENT, BONNEVILLE POWER ADMIN., ENVIRONMENTAL ASSESSMENT: PROPOSED CONTRACT WITH SOUTHERN CALIFORNIA EDISON 17 (May 1986) [hereinafter ENVIRONMENTAL ASSESSMENT].

77. Surplus Marketing Update, supra note 76, at 3.

78. NORTHWEST POWER PLANNING COUNCIL, SURPLUS POWER IN THE PACIFIC NORTHWEST 3
D. Environmental Degradation

In general, when power plants are dispatched, the sequence reflects operating costs: the most expensive units are shut down first. Gas and oil units drop off a system first, followed by coal. These technologies account for more than 70% of U.S. electrical generation, with coal representing more than three-fourths of that total.79 Outside the hydropower-dominated Pacific Northwest, nuclear generation is seldom, if ever, curtailed for economic reasons. Hydroelectric units have the lowest operating costs and the preferred position on any utility's dispatch order.

This means that most of the capacity that is in surplus at any given time has relatively high operating costs and burns nonrenewable fossil fuels that contribute significantly to global warming, acid rain, and other air pollution problems. The utility industry accounts for two-thirds of U.S. sulfur dioxide emissions and almost one-third of carbon dioxide releases. In each case, coal-fired plants are the primary sources.80 Moreover, some utilities' "dirtiest" coal-fired plants also have relatively high operating costs compared to other units in the same systems.81 The environmental benefits of not running such facilities should be, but seldom are, included in any assessment of efforts to stimulate additional consumption.82

Prospects for a harder look at these benefits are uncertain. Public utility commissions are not generally inclined to assume environmental protection responsibilities, and federal regulators have disclaimed any authority to evaluate the environmental merits of interstate power marketing propos-


80. See Brockmann, Acid Rain: Corroding United States-Canadian Relations, 6 J. ENERGY L. & POL'TY 357, 361 (1985) (sulfur dioxide); The Greenhouse Effect, EPRI JOURNAL, June 1986, at 13 (utilities account for 28% of U.S. carbon dioxide emissions, compared with 29% for all other industries combined, 27% for transportation, and 16% for homes and businesses).

81. While there is no a priori reason to assume positive correlations between operating costs and emissions, they sometimes exist. See, e.g., Comments of the Natural Resources Defense Council on the Bonneville Power Administration’s Proposed Long Term Intertie Access Policy and Draft Environmental Impact Statement (Jan. 15, 1987), at app. 4 (Pacific Northwest coal-fired plants with highest sulfur dioxide emissions are also among most expensive to operate, because higher fuel costs overwhelm savings from less stringent pollution controls); Motion to Intervene of the Natural Resources Defense Council, Monongahela Power Co., Fed. Energy Reg. Comm’n Rep. No. CP87-330-000 (1987) (arguing that expanding Ohio Edison’s power production would be likely to involve increased operations at several northern Ohio units that “are among the ‘dirtiest’ power plants in the nation”).

82. As Section III.C. supra suggests, this does not mean that an environmental case can never be made for increased power production at existing facilities. Long term power transfers may reduce both buyers' and sellers' needs for new generating capacity, and temporary emissions increases in the sellers' service territory may be more than offset by reduced emissions from the buyers' generators. See, e.g., ENVIRONMENTAL ASSESSMENT, supra note 76, at 19-20.
However, earlier discussion indicates that utilities and regulators have ample independent grounds for adopting marketing policies that will improve environmental quality even as they advance economic interests.

IV. Toward Responsible Power Marketing

A threshold question is whether any of this Article's arguments can be persuasive to utilities whose net revenues continuously rise and fall in synchrony with kilowatt-hour sales. After all, managers who cannot meet the next year's revenue goals may not be in a position to address long term economic or environmental considerations.

While it is extremely important to break the artificial linkage between sales volume and profits, progress remains possible in the interim. The next two sections identify means for avoiding many of the dangers sketched above, even where automatic revenue adjustment mechanisms are presently unavailable. The focus is two of the nation's largest regional power systems, some of whose key characteristics are widely shared among utilities elsewhere in North America. The Article closes with proposed guidelines for responsible power marketing, which draw both on the case studies and on the analysis that precedes them.

A. Accommodating Regulatory Concerns: A Residential Sector Model

If profits will increase automatically with increasing sales of kilowatt-hours, it is natural to look for pricing strategies that will boost both sales and profits. Often this involves trying to make rate structures more enticing to those in a position to consume high volumes of power. Despite the benefits to stockholders and some ratepayers from the proposed reforms, regulatory approval is far from assured. Intervenors concerned about environmental and least-cost planning issues are likely to appear, along with representatives of lower volume users such as low income ratepayers.

One response is to seek ways of accommodating marketing, equity, and long term planning objectives. An illustration appears as Appendix A,
which is an agreement filed with the Montana Public Service Commission by the Natural Resources Defense Council (NRDC), an environmental organization, and the Pacific Power & Light Company, the Pacific Northwest's largest investor-owned utility.

The agreement calls for NRDC to withdraw its objections to the introduction of declining block rates for Pacific's residential ratepayers. In return, Pacific agrees to undertake a least-cost planning process and an Action Plan, which are designed to ensure that "[b]efore it invests in new generating facilities, Pacific will exploit all practicable and cost-effective conservation alternatives that offer equivalent or better system reliability." The immediate emphasis is on preventing "'lost opportunities' for including cost-effective efficiency improvements in long-lived end uses of electricity."

The Action Plan includes programs for encouraging efficiency improvements in all major long-lived residential power uses, including building shells, refrigerators, freezers, water heaters, and heat pumps. Special provision is made for low income ratepayers, whose participation in "weatherization" programs must be at least proportional to their numbers in the general population.85

Appendix A is a useful review of the numerous ways in which utilities can invest effectively in residential conservation resources. Through a combination of aggressive marketing, flexible cash incentives, and legislative advocacy, Pacific will work to ensure that long-lived uses of its product become significantly more efficient. These investments represent neither charity nor social engineering; they constitute a utility's purchases of inexpensive power resources. Electricity that would have been absorbed for decades by inefficient buildings and appliances, absent Pacific's intervention, will now be available to meet the needs of new families and businesses.

While surpluses persist, Pacific will focus its acquisitions in the category of what otherwise would be lost conservation opportunities. If these initiatives succeed, near term consumption increases in response to the new rates will be dominated by behavioral changes and other reversible actions (higher thermostat settings and reduced wood use, for example) as opposed to investments with protracted consequences for the utility system. Higher net revenues from the temporarily increased consumption will finance the long term conservation investments.86

85. Such programs install improved insulation and glazing in houses and apartments. The agreement recognizes, in item 3, that achieving this goal will require full funding of conservation measures installed in low income households.
86. Another alternative would be to amortize these payments over a period of years by incorporating them in Pacific's rate base. However, the company seeks, at least temporarily, to prevent either
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Pacific also pledges to revise its new rate structure should it determine "that, within three years, there is a substantial possibility that . . . the Company will have to invest in new generating capacity or power purchase contracts with costs exceeding system average costs." In that event, price signals will be changed to reflect the possible need for higher cost resources.

On December 8, 1987, the Montana Public Service Commission approved the agreement and granted Pacific's request for declining block rates. Other regional regulators have praised the agreement as "path-breaking" and "an extremely encouraging precedent for the entire Pacific Northwest region, and indeed for the nation."88

B. Reducing the Costs of Rate Discounts: An Industrial Sector Model

With increasing frequency, large industrial customers are threatening to abandon their electric utilities in favor of self-generation or alternative fuel suppliers. Other industries, on the verge of expanding or relocating plants, are attracting the attention of utilities with capacity surpluses. These competitive stimuli typically elicit offers of rate discounts, on the theory that the system is better off with a less lucrative sale than with no sale at all. If the customers go elsewhere, other ratepayers will have to shoulder an increased share of the system's fixed costs.

Appendix B reprints an NRDC proposal to the California Public Utilities Commission, which has been considering guidelines for the use of industrial rate discounts. NRDC points out that where discounts are appropriate they can be delivered either by cutting industries' electric rates or by improving their production efficiencies. Like other customers, industries' interests lie in lower bills for energy services, as opposed to lower rates per kilowatt-hour. Utilities that offer rate discounts should be will-

89. See supra note 27.
90. As indicated supra at note 34, California's ERAM mechanism does not apply to industrial sales.
91. For example, it is at least doubtful that industrial customers who routinely reject relatively lucrative conservation investments would indeed leap at the opportunity to install and maintain their own generating equipment, absent lucrative long term power purchase guarantees. See supra text accompanying notes 41-45, and sources cited therein. The threat to self-generate is, of course, a rational and effective bargaining tactic.
 Utilities should not resist testing whether they can hold customers more cheaply with conservation payments than with rate discounts; their own stockholders would be among the beneficiaries. Regulators in both California and Connecticut found such arguments persuasive in recent decisions that directed utilities to make industrial efficiency investments prominent parts of their competitive arsenals. In the Pacific Northwest, BPA has offered to spend $76 million at Northwest aluminum plants in order to make the industry more competitive, "bolster BPA revenues . . . and relieve pressure on the rates that other BPA customers pay." This program proceeds from the assumption that utility-financed conservation measures will leave companies "in a better position to survive economic downturns and operate at higher levels of plant capacity."

Appendix B also outlines ways to avoid adverse long term effects from demand recruited through rate discount contracts. Customers would agree, as a contractual term, to one of two conditions. Either they would ultimately place part of their current loads on interruptible schedules, in proportion to the reduction in their bill resulting from the rate concession, or they would agree to install equivalent efficiency improvements or self-generation equipment on schedules agreeable to the utility. By explicitly withdrawing the utility's obligation to remain in readiness to meet these loads, such provisions would ensure that the utility system did not add costly new capacity to serve consumers that can only afford to buy when capacity is inexpensive.

Comparable proposals are surfacing on other systems. Detroit Edison recently conditioned a major industrial discount on interruption of service

92. To make the utility indifferent between the two options, the calculation of the conservation payment would have to incorporate lost revenues from the recipient's reduced consumption, unless—as is perfectly plausible—the recipient were willing to commit to near term production increases in the aftermath of efficiency improvements at its plant.

93. See Rulemaking Proceeding on Comm'n's Own Motion to Revise Electric Utility Rulemaking Mechanisms, Cal. Pub. Util. Comm'n, Decision 88-03-008, at 48 (Mar. 9, 1988) ("It is reasonable to require utilities to present customers with a menu of conservation options" as alternatives to rate discounts); Application of the Conn. Light & Power Co. to Amend its Rate Schedules, Conn. Dep't of Pub. Utilities, No. 87-07-01, at III-14 (1988) ("[Conservation and load management] will be a valuable marketing tool to retain customers who might otherwise be lost to self-generation and to promote general customer satisfaction as the Company addresses the competitive challenge in electricity markets").


96. Service to interruptible customers can be suspended if electricity supplies tighten, and utilities need not plan the addition of resources to serve interruptible loads. Battelle Pac. Northwest Laboratories, The Direct Service Industries: Their Contribution to the Northwest Power System and Economy vii-viii (1983) (value of interruptible customers as "forced outage reserves, generating plant and conservation delay reserves as well as stability reserves").
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when marginal power costs increase. BPA has decided to revise its marketing programs to “strengthen provisions to ensure consistency with goals of maximum energy efficiency and minimum long term resource development.” Specifically, “[i]n exchange for [contracts guaranteeing] rate stability, BPA would require: (1) initial state-of-the-art energy efficiency; (2) future load reduction through efficiency improvement; (3) partial interruptibility after advance notification of impending load/resource deficits; or (4) some other operating characteristics which benefit the [power] system.”

Such provisions have already been incorporated in the BPA efficiency program for aluminum smelters described above; the industries’ long term contractual entitlements to power have been reduced by an amount corresponding to the anticipated contribution of their utility-financed conservation.

C. Guidelines

These case studies and the earlier discussion suggest a five-part test for utilities’ power marketing programs, which could be applied in either internal or regulatory forums:

1. Would the program exacerbate market barriers to long-lived conservation measures with “lost opportunity” characteristics? If so, has the utility adopted programs to minimize irreversible losses of this kind?
2. Would the program increase uncertainty about future electricity needs by introducing substantial amounts of highly price-sensitive consumption? If so, have steps been taken (through contractual commitments such as those described in Appendix B, for example) to insulate the system from costs associated with such uncertainty?
3. To the extent that rate discounts feature in the program, does the utility offer efficiency incentives as an alternative way of retaining the same customers’ business?
4. Might the program preempt more lucrative wholesale power sales opportunities?
5. In conjunction with the marketing program, has the utility developed and maintained the capacity to elicit efficiency improvements

97. Ponczak, Michigan Automaker to Save 20\%\% on Discount Electric Rate, ENERGY USER NEWS, Sept. 7, 1987, at 1, col. 1 (“In return for the lower rate, the utility is given the right to interrupt service whenever its marginal cost of production rises above 4 cents per kilowatt-hour.”).
98. BONNEVILLE POWER ADMIN., supra note 30, at iii, 10.
99. Id.
100. See Bonneville Power Admin., supra note 95, at 14.
from all major categories of electricity use in preparation for ultimate exhaustion of current surpluses?

Managers would find it easier to embrace these guidelines if their companies' net revenues were shielded from downward fluctuations in kilowatt-hour sales; some variant of California's ERAM remains an important inducement to responsible power marketing. But nothing in the guidelines would require utilities to shed their competitive orientation in a volatile and changing energy marketplace.

Conclusion

As a strategy for winning and holding customers, permanently lower bills are likely to be more effective than temporarily lower rates. The most reliable way to keep customers' bills and rates down is to ensure that their power systems can postpone costly new generators as long as possible. And the best course for meeting that objective without jeopardizing utilities' service obligations is to prevent market barriers from obstructing efficiency improvements that save power more cheaply than it can be generated.

None of these objectives are served by marketing strategies designed simply to increase electricity consumption and make fuller use of existing generating capacity. Conservation investments remain a more promising route to competitive success for an industry that can never forget the fate of Samuel Insull.
BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MONTANA

In the Matter of the Application of PACIFIC POWER & LIGHT COMPANY
for Authority to Adopt New Rates and Charges for Electric Service Furnished in the State of Montana

UTILITY DIVISION Docket No. 86.12.76

STIPULATION OF PACIFIC POWER & LIGHT COMPANY
AND THE NATURAL RESOURCES DEFENSE COUNCIL

INTRODUCTION

This is a Stipulation between Pacific Power & Light Company (Pacific or the Company) and the Natural Resources Defense Council (NRDC), which is intended to resolve, as between Pacific and the NRDC, all contested issues in this proceeding.

As a result of this Stipulation, the NRDC withdraws its objections to the residential rate design proposed by Pacific in this proceeding. The NRDC understands and agrees that Pacific's performance of its obligations under this Stipulation is conditioned upon the Montana Public Service Commission's (Commission's) substantial approval of the rate spread and rate design proposed by Pacific. If the Commission declines to substantially approve Pacific's proposed rate spread and rate design, this Stipulation shall have no further force and effect.

STATEMENT OF PRINCIPLES:

A. Before it invests in new generating facilities, Pacific will exploit all practicable and cost-effective conservation alternatives that offer equivalent or better system reliability.

B. Given pervasive and durable market barriers, electricity price signals provided to customers in utility rates will not capture all conservation that is cost-effective from a utility's perspective.

C. Pacific's power marketing programs should be designed to prevent what the Northwest Power Planning Council has termed "lost op-

101. Although in most respects self-explanatory, the Stipulation includes a few references that require brief definition. The "Model Conservation Standards" of Item 1 are the Northwest Power Planning Council's efficiency standards for new residential buildings, which are designed to reduce space-heating electricity needs by more than 50% compared with typical current practice. The "Oregon ZIP Weatherization Program" of Item 2 offers zero interest loans to Pacific customers who improve the thermal integrity of older homes. Item 5 cites a "Hasslefree Guarantee" program that promotes the purchase of electric water heaters.
opportunities" for including cost-effective efficiency improvements in long-lived end uses of electricity.

D. Flexibility in rate design to effectively compete is appropriate and necessary in an era of electricity surpluses and competition, provided that care is taken to avoid irreversible losses of cost-effective conservation opportunities. If such losses have been minimized, regulatory support for pricing innovation should be provided.

E. The principles embodied in A through D above are integral components of a least-cost planning process.

**ACTION PLAN**

1. **Model Conservation Standards:** Pacific will announce its adoption of MCS energy savings and air quality levels as the minimum levels on all programs for new home construction. By November 1, 1987, Pacific will develop a strategy designed to induce the marketplace to want, accept, and ask for energy efficient homes which individually comply with the MCS. The program may initially include incentives other than cash payments, but Pacific is committed to designing a program to meet the Council’s goal of achieving 85 percent of MCS savings in new residential construction by the close of 1989. If alternatives to cash payments provide insufficient progress toward that goal, then no later than January 1, 1990, Pacific will introduce cash payments at least equivalent to those being offered by the Bonneville Power Administration (BPA) in July of 1987 under its Super Good Cents Program. Progress will be deemed insufficient unless the average penetration rate for Pacific’s program at least matches that recorded for BPA’s Super Good Cents Program for 1988. If that level is not achieved, the required level will become 110 percent of the Super Good Cents 1989 achievement level.

2. **Oregon ZIP Weatherization Program:** Pacific will seek to revise its Oregon ZIP weatherization program tariffs to test requirements that 1) recipients of weatherization funding install all cost-effective and structurally feasible measures at the same time, and that 2) the following minimum weatherization levels be utilized where structurally feasible:
   a. Glazing—triple glazing, for single-pane windows (double glass windows will not be retrofitted);
   b. Wall insulation—R-11, for houses without wall insulation installed;
   c. Ceiling insulation—R-38, for houses with less than R-30 in place (R-30 or better attics will not be retrofitted);
   d. Floor insulation—R-30, for houses with less than R-19 in place, unless a wooden superstructure would be needed to hold the insula-
tion in place, in which case R-19 is the target (R-19 or better floors will not be retrofitted).

Pacific will also work on a best efforts basis to get such standards and requirements incorporated in joint projects with other agencies for low income weatherization.

3. **Low Income Weatherization Programs:** The Company's goal is to achieve at least proportional participation by low income customers for current and future weatherization programs. The Company will continuously monitor its progress and publish annual reports documenting the results. The Company acknowledges that the way to achieve proportional participation is to construct programs which, with all funding sources considered, provide full funding of weatherization to the participant. Therefore, in Montana, Pacific will begin a program this year which will couple Pacific's funds with other agencies' available funds to achieve proportional penetration for low income customers. Pacific's dollar commitment to this program will be $100,000.

4. **Appliance Efficiency Standards:** Pacific has consistently supported legislation to raise appliance efficiencies to levels that are cost-effective as resources; such standards will remain one of the Company's major legislative priorities. Recognizing, however, that such standards are unlikely to take effect before the early 1990's, and that the standards could fall short of those that are cost-effective for the Region, the following activities will be undertaken:

a. Pacific will support BPA's "Energy Efficiency Award" program for refrigerators and freezers, throughout Pacific's service territory in the Northwest Region.

b. Pacific will take the lead in initiating a market research and demonstration effort to develop a cost-effective incentive program for encouraging purchase of high-efficiency appliances. The program will be designed to rigorously test rebate and other promotional programs for highly efficient models in at least the following long-lived product categories: refrigerators, freezers and heat pumps. The tests will be designed by a Research Advisory Group (RAG) with representatives from Pacific, the Northwest Power Planning Council, BPA and the NRDC. The RAG will consult with representatives of the American Council for an Energy Efficient Economy (ACEEE), the Electric Power Research Institute (EPRI), the Northwest Conservation Act Coalition (NCAC), state regulatory commissions, the appliance industry and other appropriate groups as needed. The RAG will function by consensus and will meet to begin work on this project at least twelve weeks before the proposed effective date of any new Oregon rate schedules. After receiv-
ing approval for implementation of the Company’s proposed residential rate design in Montana and Oregon, Pacific will provide up to $500,000 per each of the two succeeding fifteen month periods to complete the design and research. Additional funding of $350,000 per each of the same two fifteen month periods will be made available upon approval for implementation of the Company’s proposed residential rate design in Washington. For purposes of this subsection, “approval for implementation” means regulatory action that permits substantial achievement of Pacific’s rate design objectives.

5. **Energy Efficiency in Pacific’s Marketing Programs**:

All Pacific’s future appliance/equipment programs will promote efficient units subject to reasonable availability. For heat pumps, Pacific will adopt an initial standard of 6.8 HSPF. For water heaters, the initial standard is the 1990 Federal standard. Until the energy factor is normally displayed on water heaters, it may be necessary to express the standard using insulation values. By a date six months from the date of the order in this proceeding, Pacific will review and modify if necessary, as agreed to in negotiations with the NRDC, the efficiency standards for both heat pump and water heater programs to reflect an inquiry conducted in consultation with the RAG, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), the Edison Electric Institute (EEI) and other appropriate groups. The inquiry will address the feasibility of upgrading the initial standards at the close of the six-month period, taking into account

1. that the purpose of Pacific’s marketing programs is to maintain market share;

2. cost-effectiveness of the additional savings from an upgraded standard;

3. the tradeoffs from the customer’s perspective of increased net capital costs versus operating costs;

4. availability and reliability of models in the relevant size categories;

5. availability of brands carried by dealers in Pacific’s service territory;

6. the appropriateness and timing of further improvements in the standard over time;

7. likely impacts of the programs themselves on current market conditions;
(8) the impact of varying balance points for heat pumps on efficiency and customer cost tradeoffs;

(9) the acceptability and credibility with Pacific's trade allies necessary to make a program effective;

(10) the suitability of the resulting standard to communication through mass media techniques;

(11) timing of standard introduction to allow dealers opportunity to update inventory at their major reorder point;

(12) minimization of adverse reaction in the market;

(13) that the standard needs to be easy to understand and explain; and

(14) the possible need to adopt a standard that differentiates between rural and urban markets, and between units of different sizes.

If in the future Pacific develops programs promoting other appliances, such as refrigerators and freezers, efficiency standards will be adopted in consultation with the NRDC and other appropriate groups at that time, prior to program implementation. Pacific will review standards every two years and revise them appropriately to reflect changes in availability of energy efficient appliances and other relevant criteria.

No further promotion of Pacific's "HassleFree Guarantee" water heater program will be made anywhere in Pacific's service territory until the initial efficiency standard is incorporated. Materials which direct customers to choose efficient water heaters will be incorporated into the existing program. Oregon participants in the existing program will be instructed that Pacific's reimbursement payment is conditioned upon proof that replacement water heaters comply with Oregon code requirements. All new promotions will incorporate the then-current standards (including any improvement in initial standards).

6. Rate Design Evaluation Trigger: Wherever declining block rates are adopted in its service territory, Pacific will provide notices to its customers that the rates are a reflection of conditions that are subject to change, and that it may be necessary in the future to charge higher prices for increased consumption. Such notices shall be inserted in residential customers' bills with each rate change, and shall be repeated at least every two years. Under either of the following circumstances, Pacific will
request an upward adjustment or elimination of declining block rates through its system:

a. Pacific is buying power under BPA's New Resources Rate to meet its retail load requirements, and BPA acquires an option for a new resource(s) whose projected cost per kilowatt-hour would exceed both the current New Resources Rate and Pacific's tailblock rates.

b. Pacific determines that, within three years, there is a substantial possibility that to meet its retail load requirements the Company will have to invest in new generating capacity or power purchase contracts with costs exceeding system average costs.

DATED this 22nd day of August, 1987.

NATURAL RESOURCES DEFENSE COUNCIL

By______________________________
Ralph Cavanagh
Its Attorney

PACIFIC POWER & LIGHT COMPANY

By______________________________
George M. Galloway
Its Attorney
Appendix B

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA


OUTLINE OF NRDC'S PROPOSED GUIDELINES FOR SPECIAL CONTRACTS

This summary assumes, without conceding, that utilities must offer concessions to some large commercial and industrial customers to prevent uneconomic bypasses of the utilities’ systems. The purpose of such concessions is to lessen the attraction of self-generation by reducing customers’ bills; for some reason, utilities have focused almost exclusively on rate strategies for this purpose. Yet bills can also be reduced by increasing the efficiency of customers’ electricity consumption: “Long-range conservation continues to be an important goal, and conservation can be an effective tool in limiting bypass.” Decision 87-05-071, Finding of Fact #12, at 23 (5/29/87).

DISADVANTAGES OF SOLE RELIANCE ON RATE REDUCTION OPTIONS:

1. Increased volatility of system loads, and consequent increases in planning uncertainty (lower rates encourage lesser operational and process efficiencies, reducing customers’ ability to absorb future rate increases and reducing their national/international competitiveness over the long run);
2. Possibility that what begins as a “temporary” rate concession cannot be withdrawn when contract term expires (customers acclimated to lower rates will use political leverage to sustain them);
3. Preemption of long-lived process efficiency improvements that are cost-effective alternatives to fossil fuel combustion at utility generators and/or new capacity additions (incentives to make long-lived efficiency investments are damaged by reduced rewards and increased uncertainties associated with availability of rate-concession contracts).

A REMEDY: PROPOSED GUIDELINES

1. Customers who are offered a rate concession must also be offered, as an alternative, a conservation payment of equivalent present value.
Customers who elect conservation payments will continue paying current rates.

2. Regardless of whether customers elect rate concessions or conservation payments, they must agree to one of the following contingencies upon termination of their special contracts:

a. Shift of specified fraction of customers' *current* load (at outset of special contract) to interruptible status (not less than the percentage reduction in the customer's bill represented by the rate concession or conservation payment); or

b. installation of self-generation equipment, upon the utility's request, that reduces the customers' load by a specified fraction (again, not less than the percentage reduction in the customer's bill represented by the rate concession or conservation payment).