A GUIDEBOOK AND RESEARCH AGENDA FOR RESTRUCTURING THE ELECTRICITY INDUSTRY

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I. INTRODUCTION

"Curiouser and Curiouser"

Alice in Wonderland

For the second time in three decades, it's "Alice in Wonderland" time for America's electric utility industry. In the 1970s, an "energy crisis" turned this industry upside down, sent electricity prices soaring, and all but unraveled a regulatory compact that had delivered blue chip dividends to shareholders and ever decreasing rates to consumers for over fifty years.¹

Today, the new chaos threatening this once staid and most stable of industries comes in the form of a proposed massive industry restructuring. From coast to coast, state public utilities commissions (PUCs)—spurred on by a revolutionary rulemaking from the Federal Energy Regulatory Commission (FERC),²—are proposing sweeping restructuring plans. These proposals include various elements of complete deregulation of electricity generation, fair and open access to the transmission grid, and replacement of traditional rate base regulation (RBR) of electricity distribution with a more market-oriented "performance-based ratemaking" (PBR). At the forefront of this reform is the California Public Utilities Commission (hereinafter CPUC). On May 24, 1995, the CPUC embraced all three points of the restructuring paradigm.³ In that decision, a majority of commissioners rejected the "Direct Access" (or "Bilateral Contracts") model of restructures.

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^{1.} See generally Peter Navarro, The Dimming of America: The Real Costs of Electric Utility Regulatory Failure (1985).

^{2.} Notice of Proposed Rulemaking and Supplemental Notice of Proposed Rulemaking, Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, IV F.E.R.C. STATS. & REGS. ¶ 32,514 (1995) [hereinafter Mega-NOPR].

^{3.} Proposed Policy Governing Restructuring California's Electric Services Industry and Reforming Regulation, 161 Pub. Util. Rep. 4th (PUR) 217 (1995).

turing in favor of a more centralized wholesale pooling model known as POOLCO (or "Universal Access").⁴

In contrast, on the East Coast, regulators seem more inclined to endorse the Direct Access model. Bilateral contracts between buyers and sellers facilitated by the retail wheeling⁵ of power take the place of a central pool in ensuring that power reaches its destination. In New Hampshire, the state legislature has approved a pilot project that will allow a non-utility marketer to "offer competitive electricity to a full range of industrial, commercial, and residential customers."⁶ Coalitions of business, consumer, environmental, and utility interests in both Massachusetts and Rhode Island have published their own more comprehensive versions of a restructuring manifesto.⁷ These coalitions have urged their respective PUCs to expedite their proposals.⁸

As regulators and legislators depart for this "brave new world" of electricity restructuring and confront fundamental issues such as whether to adopt Direct Access or POOLCO, it is becoming increasingly clear this is a highly speculative journey fraught with risk both for utility shareholders and consumers—as well as the broader U.S. economy. Many utilities particularly those saddled with now economically obsolete power plants are facing the loss of billions of dollars. There is great regulatory uncertainty whether shareholders will be compensated for all, some, or *none* of this so-called "stranded investment." Utility consumers run the risk of a "civil war" as big industrial consumers and smaller residential ratepayers prepare to square off over some very high stakes: Who will capture the lion's share of the economic savings from deregulation, and who might be saddled with an unfair share of the electricity industry's stranded investment?

Electricity restructuring is also a potentially crucial factor in reinvigorating a nation facing chronic budget and trade deficits and lagging productivity. In fact, much of the impetus for restructuring comes from the growing realization among policymakers that both the cost and reliability of electricity play key roles in creating—and destroying—competitive advantage in our increasingly global economy.⁹

The purpose of this article is to provide both a guidebook and research agenda for the restructuring regulator. The overriding goal is to provide a framework within which this restructuring debate can swiftly and efficiently proceed. To lay the historical and legal predicate, Section II examines the events motivating the restructuring movement and briefly reprises ongoing

^{4.} Id.

^{5.} Wheeling occurs when transmission or distribution facilities owned by one entity are used to transmit power for another entity. Retail wheeling occurs when the power is transmitted to an end-user of electricity.

^{6.} The News in Focus, ELEC. J., July 1995, at 15.

^{7.} Id. at 13-14.

^{8.} The Michigan PUC has also embarked on a limited retail wheeling experiment. See The News in Focus, ELEC. J., May 1994, at 6.

^{9.} See generally Peter Navarro, Creating and Destroying Comparative Advantage: The Role of Regulation in International Trade, 13 J. COMP. ECON. 205, 205-26 (1989).

developments in the seminal California restructuring debate. Sections III, IV, V, and VI then systematically examine issues related to the three broad areas of restructuring—generation, transmission, and distribution. This is done within the context of both a general theory of restructuring as well as an application to the California experience.

Specifically, Section III focuses on the deregulation of electricity generation and associated issues, such as the degree of competition in the generation market and a perceived need to break up vertically integrated utilities. Section IV reviews the critical issue of stranded investment. Section V examines fair and open access to the transmission grid within the context of both equity and efficiency, describes and evaluates the Direct Access and POOLCO models (and their variants), and identifies looming jurisdictional problems between the states and the FERC. Section VI evaluates restructuring issues relating to electricity distribution, including the proposed replacement of traditional rate base regulation with performance-based regulation and the relative economic impacts of restructuring on different classes of consumers.

Turning to more system-wide issues, Section VII then examines the uncertain fate of so-called "public responsibility programs" such as low income assistance and integrated resource planning in a restructuring environment. The article concludes with a summary and discussion of policy implications.

II. THE HISTORICAL AND LEGAL PREDICATE

Why is an industry which enjoyed stable and effective regulation for over fifty years now moving with almost lightning speed towards a fundamental restructuring unprecendented in its history? The answer lies in a complex web of historical events and public policy responses—set against a backdrop of rapid technological change, a seismic shift in the American ideological center, and globalization of the U.S. economy.

A. An Era of Stability

For almost five decades, there has been comprehensive rate regulation of all phases of the electricity industry, from generation and transmission to distribution. The underlying economic rationale for such regulation is that each of these three segments of the industry is a "natural monopoly" characterized by economies of scale or scope and high barriers to entry.

In the presence of such economies, the unit cost of electricity falls steadily over the relevant range of output. In a free market and over time, this means one large provider producing at lowest cost will emerge by eliminating all other competitors through price competition. Once this "natural monopoly" has eliminated other competitors, however, it raises prices and restricts output—an outcome that is both economically inefficient as well as arguably unfair.¹⁰

To avoid this natural monopoly problem, utility regulators early on entered into a "regulatory bargain" in which utilities were guaranteed a "fair rate of return" on capital¹¹ in exchange for the provision of reliable service in whatever quantities consumers demanded. The result was traditional rate base regulation, a form of "cost-plus pricing" in which the electricity price is set to the utility's average cost of producing it.

This system of traditional rate base regulation worked well for over 50 years. Utilities built ever larger and larger power plants to capture economies of scale; utility shareholders earned stable "blue chip" returns, and the real, inflation-adjusted cost of electricity continued to fall.

B. An Industry's Shattered Peace¹²

The electric utility industry's era of peace was shattered in the early 1970s. The critical moment was the 1973-74 Arab oil embargo which dramatically increased the price of petroleum, a key input into electricity generation. However, in hindsight, it is clear that this abrupt rise in petroleum prices was only the tip of an iceberg that the industry and its regulatory apparatus was in the process of colliding with. In particular, a virulent inflation that began with the Vietnam War, tough new environmental regulations, and the beginning of what was to be an economic meltdown of the nation's nuclear power plant construction program likewise all contributed to a sharp and dramatic rise in the cost of generating electricity.¹³

The result was an unprecendented era of utility rate hikes that were, in turn, met by a strong backlash from utility consumer groups. In many states, public utility commissions reacted by suppressing rates below what the utilities otherwise needed to recover their cost of capital.

In this era of rate suppression, utility executives, in turn, responded almost uniformly with a "strategy of capital minimization." They stopped building large, new, central station power plants and deferred the construction of many plants in progress. The practical result of this "rate suppression-capital minimization syndrome" was the almost total abdication by the industry of its traditional role as builders of new capacity.¹⁴

At the same time, this unprecedented upward pressure on traditional rate base regulation exposed it for what it is: a cumbersome and largely inflexible formula that functions reasonably well in stable periods but per-

^{10.} The classic economic concern from an efficiency standpoint is a "deadweight loss" or "allocative inefficiency" reflecting a misallocation of society's resources; too few resources are put into providing electricity and, therefore, too many resources are put into providing other goods.

^{11.} The courts have interpreted a "fair" return to be that which allows the utility the opportunity to recover its market cost of capital. See, e.g., FPC v. Hope Natural Gas Co., 320 U.S. 591 (1944).

^{12.} See NAVARRO, supra note 1, at ch. 1.

^{13.} See generally Navarro, supra note 1.

^{14.} See, e.g., Peter Navarro, Public Utility Commission Regulation: Performance, Determinants, and Energy Policy Impacts, ENERGY J., Apr. 1982, at 119.

forms very badly in the presence of price shocks. Thus, the seeds were first planted for its demise.

1. Purpa and the Birth of Third Party Generators

Against this backdrop and as a response partly to the oil crisis and partly to the growing environmental movement, the Carter Administration passed the Public Utility Regulatory Policies Act of 1978 (PURPA).¹⁵ Ostensibly, PURPA was to stimulate the construction of alternative sources of electricity generation such as solar, wind, biomass, and indigenous fuels. The goal was both to reduce foreign petroleum imports and develop more environmentally friendly technology.

A funny thing happened, however, on the way to energy independence. Rather than prove "small is beautiful," PURPA ironically gave birth to a whole new generation of medium- to large-size *petroleum*-dependent "Qualifying Facilities" (QFs) burning primarily natural gas. These QFs rapidly proliferated because of two key PURPA provisions.

First, PURPA stipulated a "must take" provision.¹⁶ This required utilities to purchase any and all power offered by QFs. Second, FERC regulations under PURPA required utilities to pay for this power at the so-called "avoided cost rate."¹⁷

In theory, avoided cost made economic sense. If a QF could provide a utility with alternative energy at a cost equal to that which the utility could save by not generating its own power from conventional sources, then this would be a perfect way to promote alternative energy. In practice, however, PURPA wound up creating a large—and, some say, lavish—subsidy for such third party generation because the PURPA price was set well above the utilities true avoided cost. This happened in large part because the avoided cost price was, in many cases, tied to long run forecasts of petroleum prices that proved *ex post* to be far too high.¹⁸

This large PURPA subsidy coupled with PURPA's "must take" clause gave birth to a whole new industry of third party generators. In earlier times, the utilities might have strenuously fought this encroachment into its generating territory. But in an era of rate suppression and capital minimization where capacity shortages loomed on the not too distant horizon, many utility executives welcomed these QFs. Indeed, some utilities created their own unregulated subsidiaries and got into the QF business themselves—knowing a very good deal when they saw one.

^{15.} Pub. L. No. 95-617, 92 Stat. 3117 (codified as amended in scattered sections of 16 U.S.C.).

^{16. 16} U.S.C. § 824a-3(a) (1994).

^{17.} PURPA itself says "up to" avoided cost. See 16 U.S.C. § 824a-3(b) (1994).

^{18.} As Vikram Budhraja has written: "The forecasts for the late '90s were for \$100-per-barrel oil, shortages of natural gas, and double-digit inflation. None of those forecasts came true, but the QFs are still paid as if they did." Vikram Budhraja, Generation as a Business—Facts, Fumbles, Fictions and the Future, ELEC. J., July 1995, at 38. See also Jerry R. Bloom & Joseph M. Karp, The Folly of PURPA Repeal, PUB. UTILS. FORT., July 1, 1995, at 52.

2. EPAct, The Mega-NOPR, and Opening the Transmission Grid

Even as PURPA was creating a whole new breed of competitors in the electricity generation market, FERC decisions and another Federal law—the Energy Policy Act of 1992 (EPAct)¹⁹—began to pave the way for opening the nation's transmission grid, another necessary feature for a competitive market in generation.²⁰

Prior to the EPAct, utilities within the industry zealously guarded the rights to their transmission grid. Particularly for large, vertically integrated companies, ownership of the grid insulated them from competition and preserved their monopoly power. The reason: Even if a competitor outside the grid could offer a cheaper rate to the utilities' customers, the competitor had no way of "wheeling" that power to the customer without paying the utility a transmission fee. By controlling access, utilities could effectively thwart competition.

Beginning as early as the 1970s, however, the FERC began to advocate an opening of the transmission grid. The result, after years of debate, was the EPAct. The EPAct greatly expanded the FERC's authority to order utilities to "wheel" wholesale power through their grids for third parties. The Act also created a whole new class of Exempt Wholesale Generators (EWGs) that can compete with fewer regulatory constraints in the emerging electricity generation market.²¹

In the wake of passage of the Act, the FERC has moved aggressively to open the transmission grid. The latest mechanism it has employed is a rulemaking so comprehensive and large that it has been dubbed the "Mega-NOPR" by the electricity community.²²

The FERC Mega-NOPR is one of the most important documents of the restructuring movement. The primary goal of the Mega-NOPR is to "ensure that all participants in the wholesale electricity markets have nondiscriminatory open access to the transmission network."²³ While the Mega-NOPR does not require a utility to divest itself of its transmission assets, it does require utilities to offer users terms and conditions that are "comparable" to those that the utility itself implicitly uses to set tariffs for its own customers.²⁴ The Mega-NOPR also forces utilities to break out or "unbundle" the separate prices for each of their services and to allow customer choices (e.g., in ancillary services).

^{19. 42} U.S.C. §§ 13201-13556 (Supp. 1993).

^{20.} See generally Donald F. Santa, Jr. & Clifford S. Sikora, Open Access and Transition Costs: Will the Electric Industry Transition Track the Natural Gas Industry Restructuring?, 15 ENERGY L.J. 273 (1994).

^{21.} See generally Santa & Sikora, supra note 20.

^{22.} See supra Mega-NOPR, note 2.

^{23.} Alex Henney, The Mega-NOPR, PUB. UTILS. FORT., July 1, 1995, at 29.

^{24.} This builds on the ruling regarding tariffs in American Elec. Power Corp., 67 F.E.R.C. ¶ 61,168, 67 F.E.R.C, ¶ 61,317 (1994). See also Henney, supra note 23, at 29.

3. Technology and the End—or is it?—of Natural Monopoly

The third historical piece of the restructuring puzzle comes in the form of the same force that proved to be the catalyst for deregulating the telecommunications industry, namely, technological change. New and improved low-cost, high heat rate, combined cycle natural gas plants are now competitive with traditional large central station plants—at least at today's natural gas prices. While we shall question in far more detail below whether these natural gas plants truly spell the death of natural monopoly in the generation market, the current conventional wisdom is that they do. This claim is a primary basis for the overall restructuring efforts.

4. The Ascendancy of Free Market Conservatism

The final piece of the restructuring puzzle is a marked shift in America towards the ideological right—a shift perhaps best punctuated by the 1994 election exclamation point in which the Republican party became the majority in Congress for the first time in over 40 years.²⁵

The nation's increasingly conservative tilt has resulted in increasing calls to privatize government functions, reduce excessive regulations, reinvent government, and unfetter the free market. This ideological shift has, in turn, been largely the product of a fundamental change in the economic climate and an increasing globalization of the American economy since 1975. Indeed, while the birth of third party generators and the opening of the transmission grid have provided regulators with the *means* to restructure, it is this fundamental economic change which ultimately is providing policymakers with the primary *motivation* for restructuring.

C. The Economic Motivation to Restructure

The year 1973 not only marked the coming of an energy crisis, in hindsight, it also set the high-water mark for real per capita income in America. Since then, real income for most Americans has alternately stagnated or declined.²⁶ Part of this is due to the "OPEC tax" that was levied on Americans by the increase in energy prices paid to foreign importers. However, the broader phenomenon—linked indirectly to the energy issue—has been an increasing globalization of the America economy.

In the 1960s, trade accounted for less than 10% of total economic activity; however, in America's new open economy, trade constitutes more than 20%.²⁷ Today, American manufacturers and workers face pressures from the high technology economies of Japan and Germany as well as low wage nations such as China, Hong Kong, and Mexico. For many Americans, real income is not only stagnant but falling and the rate of job turnover and the probability of unemployment is higher.

^{25.} For discussion, see generally KEVIN PHILLIPS, BOILING POINT (1993).

^{26.} Id. at 28 (for all but the top portions of the income distribution—Phillips' "overclass"—income has fallen or stagnated).

^{27.} ROLF ANDERSON, ATLAS OF THE AMERICAN ECONOMY 20 (1994) (trade measured as a percentage of gross domestic product).

In the years leading up to the restructuring movement, Americans experienced a prolonged recession and a "jobless recovery." The twin deficits—trade and budget—continue to climb along with America's growing uncertainty about its own economic future. This economic climate has translated into a political climate far more attuned to the need for economic growth and development. In this political climate, there is a growing awareness among both legislators and regulators of the important role that electricity prices can play in the creation—and destruction—of competitive trade advantage and job growth.²⁸

This economic argument is all the more compelling in states such as California where electricity rates are roughly 50% above the national average.²⁹ Partly because of these high electricity costs, California has lost jobs not just to foreign competitors but also to "job pirates" from adjacent states such as Arizona and Nevada. Politicians can woo California's economic base with a full portfolio of lower taxes, less regulation, a more favorable business climate, and yes, cheap electricity.

It is this growing concern over economic issues that is ultimately fueling the nation's drive to restructure the electric utility industry. Given its vulnerable position, nowhere is this more evident than in California which has taken the de facto lead in the restructuring debate.

D. The California Experiment: Beacon or Warning?

The road to restructuring in California formally began in 1994 with the April 20 release of the so-called "Blue Book" by the CPUC's Division of Strategic Planning.³⁰ It was through this document that the three major points of restructuring were first widely disseminated. This seminal rulemaking proposed: (1) deregulation of electricity generation, (2) opening of the transmission grid, and (3) substituting of PBR for traditional RBR in the distribution sector.

Interestingly, this rulemaking initially divided the electricity market into a Direct Access sector in which customers would be able to buy from their supplier of choice and a "utility service sector" in which customers would continue to buy from their utility. In doing so, the Blue Book outlined two radically different and competing strategies for the future structure of California's utility industry.

One vision—Direct Access—provides a wholesale and retail wheeling structure characterized by numerous buyers and sellers engaged in bilateral transactions and a power pool whose sole job is to facilitate these transactions through "contract dispatch." A second vision—POOLCO—features a much more centralized transmission power pool, that acts literally as the

^{28.} See, e.g., Navarro, supra note 9.

^{29.} California's Electric Services Industry: Perspectives on the Past, Strategies for the Future, 1993 WL 92236, at *55 (1993).

^{30.} Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation, 151 Pub. Util. Rep. 4th (PUR) 73 (1994).

conduit between buyers and sellers.³¹ Economic dispatch is achieved through transparent prices.

On May 24, 1995, the CPUC issued Decision 95-05-045.³² It included a "Proposed Policy Decision Adopting a Preferred Industry Structure" adopted by a majority of the Commission and championed by CPUC chairman Daniel Fessler (hereinafter Majority Proposal).³³ The CPUC rejected Direct Access in favor of a variation of the POOLCO Model. At the same time, the Commission also released an alternative proposal endorsing Direct Access by dissenting Commissioner Jessie J. Knight, Jr. (hereinafter Knight Proposal).³⁴

Throughout this article, we draw heavily on these documents and related testimony. We do so for several reasons. First, the proposals successfully bracket many of the important issues in the restructuring debate and hence provide a rich source of data. Second, what happens in California is likely to have an important impact on restructuring efforts in the rest of the country. Finally, and perhaps most important, the failure of both of these documents to adequately address certain issues in the restructuring debate helps to highlight some of the important unanswered questions that a full understanding of the long term consequences of restructuring requires.

III. RESTRUCTURING THE ELECTRICITY GENERATION MARKET

"One of the central tenets of our [Majority] proposal is that the market for [electricity] generation is potentially competitive."³⁵

In this section, we examine the various issues and options facing policymakers contemplating deregulation of the market for electricity generation.

The restructuring regulator must first determine whether the market for electricity generation in the relevant jurisdiction is workably competitive. If the market is competitive—or at least potentially competitive then deregulation is a sensible option because competitive forces will drive electricity prices down and expand output. However, if the generation market can not become competitive, there is little sense in deregulating generation. Such an action would merely replace the "sins of regulation" with the "sins of monopoly."

If the generation market is not currently competitive but at least *potentially* competitive, deregulation still may be the preferred option—but only if a sensible strategy of market deconcentration can be designed and implemented. Such a strategy may entail any one (or a combination of) four basic options: (1) do nothing, (2) the forced divestiture of utility assets,

33. 161 Pub. Util. Rep. 4th (PUR) at 248.

^{31.} These visions are discussed in much more detail below.

^{32.} Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation, 161 Pub. Util. Rep. 4th (PUR) 217 (1995).

^{34. 161} Pub. Util. Rep. 4th (PUR) at 310.

^{35. 161} Pub. Util. Rep. 4th (PUR) at 248.

(3) the spin-off of utility assets, or (4) the continued regulation of some or all of utility generation.³⁶

Given the decision to deregulate generation, the restructuring regulator must also anticipate the problem of "stranded costs" and "stranded liabilities." These problems (discussed in Section IV) arise when market forces make investments or contracts made under the regulatory umbrella economically obsolete. The existence of such stranded costs and liabilities present the regulator with not only a thorny economic problem but a political one as well. As we shall see, how the restructuring regulator treats this issue economically will have an important effect on the ultimate goal of lowering electricity prices to boost our country's competitive advantage in the world economy. It will also have great bearing on the political feasibility of restructuring as well.

A. Is the Market for Electricity Generation (Potentially) Competitive?

The most important assumption underlying the proposal to deregulate electricity generation is that, once deregulated, the electricity generation market will perform much more like a competitive market than one that has been historically plagued by natural monopoly.

Historically, there is abundant evidence to support the view that electricity generation once fit the profile of a classic natural monopoly.³⁷ However, in recent years, it has become almost an article of faith within the utility industry and the broader regulatory community that the generation market is no longer a natural monopoly. This belief—which urgently needs to be more thoroughly examined—is based on two major trends.

1. The Rise of Third Party Generators

First, as previously discussed, there has been a proliferation of third party generators and QFs in the wake of passage of both PURPA and the EPAct. Today in California, for example, QFs account for fully one-third of Southern California Edison's generating needs while in several other regions of the country "QFs also comprise large amounts of existing generation capacity."³⁸

Those who advance the view that the market for electricity generation is competitive often cite these new entrants into the market as "proof" that the market will meet the test of "many sellers." However, one important point typically ignored in this argument is that if the PURPA subsidy is eliminated—as it may soon be³⁹—there may be some shakeout in the QF

^{36.} This assumes that it is the generating assets of the regulated utilities that are the source of market concentration. This may not be the case if a large player in the independent power producer market also has market power.

^{37.} Indeed, during the golden decades of its expansion, the industry built ever-larger and larger power plants, watched unit costs steadily decline, and shared these economies with ratepayers in the form of ever-decreasing rates.

^{38.} Bloom & Karp, supra note 18, at 53.

^{39.} The PURPA subsidy will disappear over time as long-term contracts are finished. However, there is a major impetus to eliminate PURPA altogether. See Bloom & Karp, supra note 18, at 52-55.

market. The result may be at least some reduction in the number of sellers in the generation market.⁴⁰

2. Technological Change and Reduced Economies of Scale

The second trend typically cited by those who characterize the market for generation as competitive is the reduction of economies of scale through rapid technological change. Proponents of this view cite recent engineering and scientific advances that have resulted in the emergence of highly efficient, natural gas-fired generation units.⁴¹ At least at currently low natural gas prices, these plants can compete favorably with traditional central station power plants characterized by large economies of scale, e.g., those fueled by coal—one of the cheapest forms of baseload generation.⁴²

It is an open question, however—and one that should be put on the research agenda—what the impact of a severe petroleum price shock might be on the relative economics of these different power plant options. It may well be that in a world of high gas prices, the relative competitiveness of gas-fired plants may turn out to be an illusion. This observation indirectly alludes to just such a possibility:

[T]he economic choice today is to quickly install these smaller, Brayton-cycle [gas-fired] combustion turbine units (25 to 250 MW) . . . These can be installed at one-half to one-third the capital cost of conventional steam-electric stations . . . The risk is that existing [baseload coal-fired and nuclear] generation plant investments being stranded today by this lower-cost capability could quickly become in demand again if the historically volatile price of natural gas increases unexpectedly, as has periodically been the case in the past.⁴³

Put another way, if significant economies of scale in generation still exist, any prospect of future petroleum price shocks would severely weaken the deregulation argument. Because deregulation is a long term proposition and because petroleum price shocks might reoccur in the wake of, say, a Middle East war or rash of tanker sinkings, conducting sensitivity analyses vis à vis the role of relative energy prices in the degree of market competitiveness is an important precaution for the restructuring regulator.

^{40.} On the other hand, it can be argued that there will be numerous entrants into the market even without the PURPA subsidy. For example, the EPAct created Exempt Wholesale Generators (EWGs) to allow utilities to join the independent power producer market. 15 U.S.C. § 79z-5a (1994). Generally, they don't qualify for PURPA subsidies and benefits.

^{41.} For an optimistic view of the impact of technological change, see Vinod Dar, [t]he Future of the U.S. Electric Utility Industry, ELEC. J., July 1995, at 17. Dar predicts that "[t]he modern gas turbine ... will profitably deliver power for less than 3.0 cents per kWh at the busbar, making both new standalone merchant and industrial and larger commercial on-site generation fiercely competitive." Id. at 18. Dar also predicts that other technological developments, such as electricity storage systems and next generation renewable technologies will make generation a highly competitive sector. Id.

^{42.} See, e.g., Budhraja, supra note 18, at 36-41. "Our marginal generation cost for oil in the 1970s was six cents per kWh. Today it is two cents per kWh using natural gas. Generating electricity by burning natural gas... is cheaper than producing power in even the most efficient new combined-cycle power plants." Budhraja, supra note 18, at 37.

^{43.} Kurt Yeager, Technology and Industry Structure, ELEC. J., July 1995, at 58.

3. Analogies to Airline, Telephone, and Trucking Deregulation

Proponents of deregulating electricity generation frequently cite the benefits from deregulating other industries such as telephones, airlines, and trucking in support of their case. However, it is important to point out that these analogies are not apt, each for their own specific reasons.

For example, in his impassioned defense of Direct Access, CPUC Commissioner Jesse J. Knight has predicted benefits from deregulating electricity similar to those experienced in the long-distance phone market.⁴⁴ In this regard, it is useful to recall that the big impetus for phone deregulation came from technological change which eliminated the natural monopoly characteristics of the long distance market. However, while satellite and cellular technologies⁴⁵ did indeed change the status of natural monopoly in the phone market forever, there has been no such far-reaching technological analogs in the electricity industry to similarly obliterate economies of scale.

Knight's analogy to airline and trucking deregulation is similarly misplaced but for a different reason.⁴⁶ As the late Nobel Laureate economist George Stigler might have characterized it, airline regulation existed for many decades simply to preserve the oligopoly power of the airlines.⁴⁷ Rapid technological change didn't bring airline deregulation about; rather it was consumer outrage over years of price gouging.

At the same time, unlike electricity generation, the trucking industry was a model of perfect competition totally absent of any economies of scale *before* it was regulated. As with the airlines, it was a shift in political power rather than technological change that brought about deregulation. There was no concern that, in the wake of deregulation, the industry would revert to being a monopoly—because unlike electricity generation—it never was.

The bottom line: if electricity generation still, in fact, retains the characteristics of a natural monopoly, its deregulation will have a very different outcome than that of other industries such as trucking, airlines, and longdistance phone service.

4. The Research Agenda to Assess Market Competition

There should be a legitimate concern among regulators that once combatants meet in a deregulated generation market, there will be an initial shakeout. After this shakeout, the generation market may look much more like an oligopoly prone to engaging in collusive pricing practices than a highly competitive market yielding lowest price to consumers.

This is precisely what resulted in the wake of the deregulation of generation in the United Kingdom where the industry settled into a monopo-

^{44. &}quot;The decision in 1984 to break up AT&T has led to increased consumer choices and enhanced competition in long-distance markets." 161 Pub. Util. Rep. 4th (PUR) at 323.

^{45.} Other important developments include the growth of digital and fiber-optic technologies.

^{46. 161} Pub. Util. Rep. 4th (PUR) at 324.

^{47.} George Stigler, The Theory of Economic Regulation, 2 BELL J. ECONOMICS 3 (1971).

listic duopoly.⁴⁸ In fact, in a study for the Regulatory Policy Institute, Yarrow found that average residential electricity prices were 25% higher and industrial prices 19% higher "than what would be expected based on pre-privatization trends."⁴⁹

Given this risk of monopolistic control of the generation market, the restructuring regulator should engage in, or sponsor, further research into this compelling topic. In this regard, it should be an important part of the research agenda to examine the extent to which new technology has eliminated economies of scale in electricity generation.

It also may well be that the construction of power plants is still characterized by significant barriers to entry both because of large capital requirements and siting constraints. This is particularly true for large central station power plants where the potential for economies of scale is greatest. If this is the case, the market for generation will not be competitive.

Finally, careful study needs to be done on the impact of the elimination of the PURPA on the number of generators in the market. A significant drop likewise would threaten the competitive viability of the market. In this regard, there is evidence that the CPUC is well aware of the hazards of market concentration.⁵⁰ Yet nowhere in the Majority Proposal does it call for comprehensive study of this potential problem.

B. Is the Market for Electricity Generation Currently Concentrated?

Even if the restructuring regulator believes that the electricity generation market is potentially competitive, he or she must face the prospect that it *currently* is not.

From the perspective of industrial organization theory, market concentration creates the potential for monopolistic behavior because at some threshold level of concentration, there is "mutual dependence recognized" by competitors in the market. Above this threshold, competitors are no longer price takers in the market. They believe that their actions will affect the actions of others in the market. At this point, the possibility of tacit collusion emerges among the players.⁵¹

In many regions of the country, the currently regulated market is significantly or highly concentrated and dominated by a small number of large producers. For example, in California, the Majority Proposal explicitly recognizes that "the current concentration of ownership of generation capac-

^{48.} See Tim Woolf, Retail Competition in the Electricity Industry: Lessons from the United Kingdom, ELEC. J., June 1994, at 56-63.

^{49.} Id. at 58 (quoting G. Yarrow, British Electricity Prices Since Privatization, Regulatory Policy Institute, Nov. 1992).

^{50.} The Majority Proposal explicitly acknowledges the problem in the U.K. where "the two largest generation companies have been able to coordinate pricing actions in order to increase bids into the pool." 161 Pub. Util. Rep. 4th (PUR) at 248.

^{51.} See, e.g., Richard Caves, American Industry: Structure, Conduct, Performance 17-35 (1987).

ity by Pacific Gas & Electric and Southern California Edison strongly implies market power."⁵²

Note, however, that concentration *per se* in the regional market is not necessarily evidence of the exercise of market power. For one thing, with full wholesale wheeling, such regional markets become subject to interregional and even national competition. For another thing, much of a region's concentrated capacity may, in fact, be economically obsolete and unable to compete in the market. Still a third factor is that there is significant evidence to suggest that there will be a strong influx of independent power producers and EWGs into the deregulated market.

In assessing the market power problem, the prudent restructuring regulator must weigh such mitigating factors against the degree of concentration. If the regulator decides concentration is a problem, four basic policy options are available: (1) do nothing and allow the competitive process to work once the veil of regulation is lifted, (2) force the divestiture of some or all of the generating assets of the concentrated players, (3) require the spin-off of some or all of the generating assets of the concentrated players, or (4) keep the utility's generating assets under some type of rate regulation and let other competitors in the spot market determine a market clearing price.⁵³

In California, the Majority Proposal stops far short of calling for the divestiture or spin-off of utility assets. Instead, it prefers to wait and see if "market power distorts the competitive market by increasing prices above competitive levels."⁵⁴ Only after that test is met will the CPUC "consider reorganization" of the investor-owned utility's generating assets, but, even then, the Majority Proposal is torn between pursuing a divestiture versus spin-off strategy and has invited comment on the issue.⁵⁵

At the same time, the Majority Proposal implicitly recognizes the difficulty of accomplishing any kind of divestiture or spin-off of nuclear generating assets. In explaining why nuclear power plants were the one kind of asset that the United Kingdom was unable to successfully divest itself of in

54. 161 Pub. Util. Rep. 4th (PUR) at 248.

55. The Knight Proposal is far less equivocating. It would require utilities to separate their generation assets from other assets but give them the option of choosing either divestiture or spin-off: "Management is given broad latitude to mitigate asset concentration, and the market power that accompanies it" 161 Pub. Util. Rep. 4th (PUR) at 339.

^{52. 161} Pub. Util. Rep. 4th (PUR) at 248. The Knight Proposal likewise acknowledges the high degree of concentration: "Data filed with the CPUC... shows that PG&E owns 69.76 [percent] of its resource mix, SDG&E owns 44.86 [percent] of its resource mix, and Edison owns 59.19 percent of its resource mix." *Id.* at 411 n.47.

^{53.} Other structural options to the problem of concentration include: "strong incentives for voluntary divestment, functional separation within vertically integrated utilities, prohibition of self-dealing (between a utility's distribution side and its affiliate's generation), prohibition of dominant generators from expanding their total amount of generation, transition contracts, regular monitoring of bids and pool practices, creation of power exchanges at key substations, using the NEPOOL approach, adding transmission to reduce the value of strategic generation, extending the market, giving operational control of strategic resources to an ISO or regulators, and instituting price caps." See California Energy Comm'n, Comments on CPUC Proposed Structure for a Competitive Electricity Industry, at 25 (July 21, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

its drive to privatize, Ed Kahn writes: "[Nuclear power presents] a contingent liability problem. The uncertain costs associated with decommissioning and fuel reprocessing proved to be too much for private sector risk bearing."⁵⁶

1. The "Do Nothing" Option

The "do nothing" option places great faith in the potential competitiveness of the generation market. To the extent that economies of scale are present, it is the most dangerous path to tread because the end result may be a concentrated, deregulated monopoly or oligopoly. As indicated above, this is what happened in the United Kingdom when generation was deregulated. The market became controlled by a duopoly of two firms that used its market power to raise prices. Eventually, government had to come in and re-regulate.⁵⁷

Under the "do nothing" option, the caveat laid out earlier holds doubly here: Regulators should fully assess potential competition before they leap into what might not be a cost-savings deregulatory bonanza but rather a monopolistic abyss.

2. Forced Divestiture of Utility Assets

In the divestiture option, the concentrated player(s) are forced to sell off their generation assets to independents. The major advantage of divestiture is that it truly breaks up the generation market into competitive pieces—providing, of course, that the pieces are sold to a number of smaller buyers rather than one large one. As we shall discuss below, this option also has an added advantage in that it provides a market valuation of any stranded assets.

However, one major disadvantage of divestiture is that it removes a player from the market with arguably the best knowledge of how to actually generate electricity, i.e. vertical integration is efficient. A second potential disadvantage is embodied in a "fire sale" argument.⁵⁸ The concern, here, is that divestiture will result in a flood of generating plants onto the market and a resulting undervaluation of the assets. This undervaluation, in turn, will result either in a large loss to shareholders or, if stranded costs are recovered on the basis of the sale price in the market, an undue burden on ratepayers who will be forced to make shareholders whole.

A third disadvantage arises if the generation market is still characterized by economies of scale. Specifically, there is nothing to insure that once divestiture breaks the market up into smaller pieces that it will not

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^{56.} Ed Kahn, A Modest Proposal: Nationalize the U.S. Nuclear Industry to Foster Competition, ELEC. J., June 1994, at 44.

^{57.} See generally Woolf, supra note 48.

^{58.} See Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation, 161 Pub. Util. Rep. 4th (PUR) 217, at 226 (1995) (statement of Henry M. Duque, Commissioner). Duque is concerned that a glut in the Western energy market will depress prices of utility generation assets. *Id*.

revert back to a concentrated market over time, albeit with a different set of oligopolists.

A fourth problem arises with issues of bond indentures and licensing. In order for a utility to divest, it would "be required to comply with the terms of its credit arrangements, including provisions of bond indenture which requires as a condition of release from the mortgage that [the utility] receive fair value for its assets and not otherwise impair the security of creditors."⁵⁹ At the same time, the transfer of licenses and permits is likely to be difficult for nuclear facilities. At a minimum, the process will be "lengthy and complex."⁶⁰

Finally, while divestiture may be a fine strategy in theory, PUCs may not have the legal authority to order divestiture.⁶¹ Nor, according to Pacific Gas & Electric, has the FERC "found divestiture to be the proper remedy for perceived market power problems where it has been asked to approve market-based pricing."⁶²

3. The Spin-off Option

The spin-off option is, in some sense, the most moderate of paths. Under this option, the investor-owned utility would create an independent subsidiary to own and operate its generating assets.

The major advantage of this option is that it would keep an important player in the market with proven skills in building and operating power plants. However, depending on how the rest of the market is structured, this option opens up possibilities of collusion and self-dealing with the vertically integrated distribution company.

4. Partial Rate Regulation

A fourth option that has been discussed in California is that of keeping at least some utility generation under some type of regulation and letting the spot market price of electricity be determined by the rest of the players in the market.

As indicated above, the private financial markets may not be willing to absorb nuclear power plants because of contingent liability problems and significant risk. At the same time, the Majority Proposal argues that neither nuclear nor hydro plants could realistically be privatized because of

^{59.} Pacific Gas & Electric Co., Comments of Pacific Gas and Electric Company on Proposed Policy Decisions on Electric Industry Restructuring, at 41 (July 24, 1995) (submitted to the CPUC) (on file with the Energy Law Journal) [hereinafter Comments of Pacific Gas and Electric Company].

^{60.} Id.

^{61.} For example, in *Comments of SCE (U-338-E) On Commission Proposed Policy Decisions*, at 49 (July 24, 1995), Southern California Edison argues that: "Under the law, the Commission is without power to compel divestiture directly or indirectly." *E.g.*, Carmel Mountain Ranch v. San Diego Gas & Elec. Co., No. D.88-03-024, 1988 Cal. P.U.C. Lexis 67, at 14 (Mar. 1988). *See also* Edison's Legal Brief at 27-28.

^{62.} Comments of Pacific Gas and Electric Company, supra note 59, at 29. For a summary of recent cases, see Alternatives to Traditional Cost-of-service Ratemaking for Natural Gas Pipelines; Request for Comments on Alternative Pricing Methods, 60 Fed. Reg. 8356 (1995). Comments of Pacific Gas and Electric Company, supra note 59, at 29.

"the difficulty that would be entailed in trying to transfer the ownership and operation of these plants to another party because of the extensive and various licenses needed from federal and state authorities to operate these units."⁶³

To address this issue, the Majority Proposal recommends that both hydro and nuclear assets be kept out of the spot market and that both types of power be priced beneath the regulatory umbrella because: "[t]here is a symmetry in bundling together the lower-priced hydroelectric resources with the higher-priced nuclear generating resources."⁶⁴

At the same time, the Majority Proposal would "set a floor and a ceiling on the rate of return for the amount of rate base . . . for which the utility retains ownership."⁶⁵ Regardless of the merit of this argument, such an ad hoc proposal greatly complicates the market concentration issue. To see this consider the following example regarding the relevant market to measure.

a. Determining the Relevant Market

Suppose the four largest generators in the market account for 60% of total power generated and that all of this generation will be kept under rate regulation. Suppose further that the remaining 40% of the power is provided by 40 small power producers of equal size. In this case, the four-firm concentration ratio in the overall would be 60%, suggesting a highly concentrated market. However, the four-firm concentration ratio in the spot market would actually be only 4%, suggesting a highly competitive market.⁶⁶

Now, suppose alternatively that of the remaining 40% of the power generated that feeds into the spot market, 75% of that came from the four largest independent producers and the rest came from 100 other small producers. In this case, the four-firm concentration ratio *in the spot market* would equal 75% and the market would be highly concentrated and prone to price manipulation by the four largest firms.

The point here is that it is not *total market concentration* that the restructuring regulator should be primarily concerned with but rather *spot market concentration*.

^{63. 161} Pub. Util. Rep. 4th (PUR) at 250. The Majority Proposal may be overstating the licensing problems associated with hydro facilities. At least at the FERC, transferring hydro licenses does not require a lengthy review in the same way as a new license does.

^{64. 161} Pub. Util. Rep. 4th (PUR) at 250.

^{65. 161} Pub. Util. Rep. 4th (PUR) at 251. "Our initial proposal is to set the floor at 150 basis points below the utility's authorized rate of return and the cap at 150 basis points above." *Id.*

^{66.} With 100 firms of equal size, each firm would have one percent of the spot market so that the four largest firms would have only four percent of the market.

b. The Danger of a Thin Market

A related issue arises when the restructuring regulator may decide to withhold certain types of generation from competing in the pool *but* require such generation to be run from the pool on a "must take" or contractual basis.

For example, in California, the Majority Proposal has proposed to withhold all hydroelectric and nuclear assets from the spot market and designate them as "must run" generators.⁶⁷ As part of its "stranded liabilities" policy (discussed in Section IV), the Majority Proposal has also indicated it will dispatch all QF power and existing wholesale contracts according to contract terms.⁶⁸ In effect, this means these types of generation will be operated outside of the pool and irrespective of the pool price. In some cases, *this will mean the pool price will be determined by a very small frac-tion of generating units*. In other cases, there may not even be a workable spot market. In comments submitted to the CPUC, the California Large Energy Consumers Association describes the problem of allowing hydro, nuclear, and QF generators preferential access to the pool (with a specific reference to Southern California Edison):

These exempt facilities and contracts comprise the majority of the utilities' generation resources on an annual average basis, averaging perhaps 60% to 65% of needed capacity. During a significant number of hours each year, perhaps as many as 1,000 hours on the Edison system, these facilities would meet 100% or more of the demand. During these low demand hours there would be no bidding, no pool operation and no pool price to be given to customers or to price the exempt units.⁶⁹

5. Divestiture vs. Spin-off

Regardless of whether a divestiture or spin-off strategy is chosen, it is important for the restructuring regulator to remember that if the market still retains significant characteristics of a natural monopoly, there is a great likelihood that the industry will re-consolidate into an oligopolistic structure. To prevent this, regulators will have to be constantly engaged in antitrust type of activity.

At the same time, if the industry retains any characteristics of a natural monopoly, breaking up the industry into little pieces will also eliminate potential savings from economies of scale that might otherwise be captured in a regulated market.

Finally, as the Knight Proposal recognizes, implementation of a deintegration strategy is fraught with peril in an industry that is currently highly concentrated:

^{67. 161} Pub. Util Rep. 4th (PUR) at 249.

^{68. 161} Pub. Util. Rep. 4th (PUR) at 238.

^{69.} California Large Energy Consumers Ass'n, Comments of California Large Energy Consumers Association on Proposed Policy Decisions, at 9-10 (July 24, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

So concentrated are these generation assets among the investor-owned utilities, that if these assets were auctioned or spun off into too few entities, these new entities would clearly possess considerable market power absent affirmative steps to mitigate it. Such market power could seriously impede workable competition.⁷⁰

IV. STRANDED COSTS AND LIABILITIES⁷¹

"Retail competition will render a substantial fraction of existing electric utility plant worthless."⁷²

Stranded costs arise when competition renders some portion of a utility's generation capacity economically obsolete.⁷³ In such a case, the utility cannot sell some or all of its power for a price high enough to earn a fair return on its investment because it is under-priced by competitors. Estimates of the magnitude of such stranded costs range from \$10 billion to as high as \$200 billion.⁷⁴

Stranded liabilities similarly arise when competition renders some or all of a utility's contract purchase power too expensive to sell in the free market. This problem is typically associated with high-priced PURPA or QF power, but it may also arise from other types of long term purchase contracts, e.g., for fuel or purchased power.

The two basic policy issues for the restructuring regulator are: (1) What percentage (if any) of stranded costs and liabilities should a utility be compensated for or allowed to recover? and (2) Assuming some level of compensation or recovery, how should that be done? Collateral issues include: How should stranded costs be valued, and what are the different mechanisms available to recover them.

The treatment of stranded costs and stranded liabilities is arguably *the* most important issue that must be resolved by the restructuring regulator for two reasons. First, recovery of such stranded investment inevitably must entail some type of fee, tax, or surcharge. Improperly administered, such a levy runs the risk of defeating the original purposes of deregulation, that is, to lower rates and encourage a more efficient allocation of resources.

72. Robert J. Michaels, Stranded Investment Surcharges: Inequitable and Inefficient, PUB. UTILS. FORT., May 15, 1995, at 21.

73. There is another type of stranded costs besides stranded generating assets. This type includes: "deferred operating expenses, deferred taxes, unamortized loss from sale of assets, unamortized debt expense, costs associated with issuing or reacquiring debt and nuclear decommissioning expenses." 161 Pub. Util. Rep. 4th (PUR) at 375.

74. See, e.g., William J. Baumol & J. Gregory Sidak, Transmission Pricing and Stranded Costs in the Electric Power Industry (1995).

^{70. 161} Pub. Util. Rep. 4th (PUR) at 339.

^{71.} A third type of stranding called "stranded benefits" is discussed at length in Section VII. Stranded benefits are associated with "public responsibility programs" such as demand side management to promote conservation and shave peaks, alternative energy programs to diversify the energy mix and promote environmental goals, and redistributional programs such as baseline rates and subsidized rates for low income consumers.

Second, a "fair" formula for the treatment of stranded costs is a necessary ingredient in any political compromise on restructuring between the major stakeholders involved, principally electricity ratepayers and utility shareholders, but also third party generators.⁷⁵ In this regard, the obvious tradeoff faced by the restructuring regulator is a classic one between equity and efficiency. In this case and as we shall see below, it will be almost impossible to recover stranded costs in the name of fairness without introducing some inefficiencies into the market.

In this section, we describe the various types of stranded costs and liabilities, examine the various arguments in equity and efficiency for their recovery, discuss the different valuation methods, and examine the different methods of recovery.

A. Stranded Costs

Under traditional rate base regulation, when a utility builds a power plant and puts it in the rate base, it is entitled to a price for power (P), equal to its average cost (AC). When P=AC, the utility recovers its market cost of capital and regulatory law has deemed this to be a "fair" return.⁷⁶

Under deregulation, the strong possibility arises that the market price available to the utility will be less than its average cost. In this case, the market has rendered some (or all) of the utility's generating plants in some degree economically obsolete, and the utility shareholder will no longer earn a fair return on his or her investment.

In such a case, this investment is said to be "stranded" by market forces. Hence, stranded costs arise when a deregulated electricity generation market fails to provide utilities with a price for power sufficient for it to recover a fair rate of return on prudent investment.

1. The Magnitude of Stranded Costs

The sheer magnitude of stranded costs makes the treatment of this issue of highest importance, if for no other reason than the political implications. As indicated above, estimates range from as low as \$10 billion to as high as \$200 billion. This means that either shareholders or ratepayers are going to be presented with a very large restructuring bill—all in the name of increased competition.⁷⁷

At greatest risk in the stranding category are large scale nuclear plants. Such plants offer a paradox for the restructuring regulator because, on the one hand, the capital charges associated with operating these plants

^{75.} It is almost axiomatic that stranded costs will be high in any PUC jurisdiction that chooses to deregulate. This is because it is only when the *regulated* average cost of electricity is greater than the *free market* marginal cost of third party generators that strong pressures for deregulation arise. This is precisely the case in areas like California and New England where AC > MC.

^{76.} This standard is embodied in the Supreme Court's decision in FPC v. Hope Natural Gas, 320 U.S. 591 (1944).

^{77.} For ratepayers, the analogy might be "take this medicine even though it tastes bitter and horrible because it's good for you."

are enormous. This is because such plants usually were built with huge cost overruns and significant delays.

However, the operating costs of such plants are the lowest of any other power alternative except hydro. The logical conclusion to draw from this observation is that it would make little sense to shut these plants down, at least for economic reasons. "Sunk costs are sunk costs" in economics, the capital has been spent, and the only relevant metric is the operating costs, so the plants should, in most cases, continue to be run.

2. Should Stranded Costs be Recovered?

"The stranded investment problem is 'merely' a matter of distributive justice. But then so was the French Revolution."⁷⁸

The issue whether stranded costs *should* be recovered is not entirely independent of the arguments about *how* stranded costs can be recovered. Nonetheless, we shall start with the "should" issue first within the context of both equity and efficiency arguments pro and con.⁷⁹ In reviewing these arguments, it is useful for the restructuring regulator to add most, if not all, of these unsettled arguments to the research agenda as issues to be resolved by additional analysis.

a. Equity Arguments-Pro

Utility shareholders should be granted full recovery of stranded costs because the utility's investments were undertaken in good faith and approved by the regulatory agency. Moreover, in many cases, the utilities were forced to make such investments to fulfill their promise to provide reliable service whenever their customers demand it. Thus, the "implicit regulatory compact" requires, as a matter of fairness, that shareholders recover their investment.⁸⁰

This, in fact, seems to be the argument that has held the most sway with the CPUC. With a "stated intention to honor past commitments," the Majority Proposal specifically allows for the full recovery of all stranded costs according to the principle that: "For utility assets subject to competition, the proposal would allow compensation to shareholders for market value below book value. Ratepayers would be compensated for value above book value."⁸¹

^{78.} Irwin M. Stelzer, Restructuring the Electric Utility Industry: Further Tentative Thoughts, ELEC. J., Oct. 1994, at 37.

^{79.} In doing so, we shall draw heavily on a point-counterpoint between William J. Baumol and J. Gregory Sidak, on the one hand, and Robert J. Michaels, on the other hand. See William J. Baumol & J. Gregory Sidak, Stranded Cost Recovery: Fair and Reasonable, PUB. UTILS. FORT., May 15, 1995, at 20, 22-23; Robert J. Michaels, supra note 72, at 21, 24-25.

^{80.} Baumol & Sidak, supra note 79, at 22.

^{81. 161} Pub. Util. Rep. 4th (PUR) at 217.

The "Takings Issue"

Some proponents of full recovery have argued that regulators who fail to compensate utility shareholders in the wake of restructuring will be violating the "taking clause" of the Fifth Amendment. As Baumol and Sidak have put it, "Purely as an economic matter, it is confiscatory to take someone's property by decree and without adequate compensation."⁸²

These proponents cite the 1989 Supreme Court decision in *Duquesne* Light Co. v. Barasch,⁸³ to support this legal argument. In the decision, the Court indicated that when PUCs set rates of return, the decisions must not "jeopardize the financial integrity of the company, either by leaving them insufficient operating capital or by impeding their ability to raise future capital."⁸⁴

Others, however, argue that *Duquesne* actually contradicts the takings argument: "We . . . hold that a state scheme of utility regulation does not 'take' property simply because it disallows recovery of capital investments that are not 'used and useful in service to the public."⁸⁵

In fact, the Court found that the "used and useful" standard does not constitute a taking even where it excludes from consideration the costs of a canceled generating plant that were "prudent and reasonable when made."⁸⁶

On this taking issue, it is also useful to note that the United States Supreme Court refused to hear an appeal of a New Hampshire ruling upholding the state PUC's decision to refuse to allow Public Service Company of New Hampshire to include the Seabrook nuclear power plant in its rate base, an action which the utility alleged forced it into bankruptcy.⁸⁷

At least to date, it appears the standard being applied by the courts is that a confiscation claim cannot be made unless the rate in question does not allow the company to "operate successfully."⁸⁸

b. Equity Arguments—Con

"Shareholders, as their name suggests, must share in the costs."⁸⁹

There is no such thing as a "regulatory compact," and it is unfair to penalize ratepayers for the imprudent decisions of utilities. In many cases,

^{82.} Baumol & Sidak, supra note 79, at 23.

^{83. 488} U.S. 299 (1989).

^{84.} Baumol & Sidak, supra note 79, at 23.

^{85.} Duquesne, 488 U.S. at 301.

^{86.} Id. at 303.

^{87.} Public Service Co., 539 A.2d 263 (N.H. 1988), appeal dismissed, 488 U.S. 1035 (1989).

^{88. 20}th Century Ins. Co. v. Garamendi, 878 P.2d 566, 616 (Cal. 1994), cert. dismissed, 115 S. Ct. 1085 (1995).

^{89.} California Farm Bureau Federation, Opening Comments of California Farm Bureau Federation on "Proposed Policy Decision Adopting a Preferred Industry Structure" and "Customer Choice Through Direct Access", at 3 (July 24, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

these utilities had ample warning that those investments that will become stranded under deregulation were ill-advised to begin with.⁹⁰ While regulators might have approved these investments, it "takes two to tango."

This, in fact, is the argument that appears to have helped sway Commissioner Knight to offer only a 90-10 split for stranded cost recovery.⁹¹ That is, under the Knight Proposal, utilities would recover only 90% of their stranded costs.

The "Takings Issue" Redux

On the legal issue of takings (and besides the points made above), some opponents of full stranded cost recovery have argued that it is moot. The reason: "shareholders have *automatically* been compensated for this [stranded cost recovery] risk by an allowed rate of return equal to the cost of capital in efficient capital markets."⁹² In California, this is an argument that has been advanced by consumer groups such as TURN, the Farm Bureau, and a coalition of large industrial users.⁹³

The regulatory compact is not a contract to avoid all investment risks. Regulation permits the utility the opportunity of recovering its investment and earning a market rate of return on it. It does not guarantee this cost recovery or return on investment. The utilities' rates of return on rate base have been approximately 10 percent in recent years, reflecting in part this risk. These rates are significantly higher than what highly safe instruments such as shortterm treasury bills or federally insured certificates of deposits earn.⁹⁴

c. Efficiency Arguments—Pro

On the pro side, Baumol and Sidak present three major arguments in efficiency.⁹⁵

(1) Under-investment of capital

The failure of utility investors to fully recover past investment will discourage future investment. From this point of view, full recovery is an important signal to the capital markets that investment in this industry is not characterized by high risk.

^{90.} As Michaels puts it: "Despite frequent claims that its roots go back to *Hope* and *Bluefield*, the [regulatory] compact is a recent intellectual invention." Michaels, *supra* note 72, at 21.

^{91. 161} Pub. Util. Rep. 4th (PUR) at 368 ("Utility management bears some responsibility in the decision to construct some power plants....").

^{92.} A. Lawrence Kolbe & William B. Tye, *The Cost of Capital Does Not Compensate for Stranded-Cost Risk*, PUB. UTILS. FORT., May 15, 1995, at 26. The authors attribute this theory to Irwin Stelzer and then, as the title of their article implies, proceed to vigorously refute it.

^{93. 161} Pub. Util. Rep. 4th (PUR) at 368 (stating "[E]quity investments are known to include risk and investors have had access to information regarding increasing competitiveness in the electric services industry.").

^{94.} California City-County Street Light Ass'n, Comments of the California City-County Street Light Association on Restructuring, at 16 (July 24, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

^{95.} Baumol & Sidak, supra note 79.

(2) Inefficient Bypass

"Incumbent burdens" ranging from high cost, long range contracts to costs associated with mandated social programs that are put upon the shoulders of the regulated utility will allow less efficient producers to outbid these utilities. To illustrate this, Baumol and Sidak offer the following example of such inefficient bypass:

Suppose that a utility can generate electricity at an incremental cost, say, 10 percent lower than its rival's cost. If the utility's inherited and inescapable cost obligations are 20 percent of its incremental costs, its less-efficient rival will clearly be able to underprice the utility, despite the rival's substantially higher incremental cost of producing electricity.⁹⁶

(3) Competitive Neutrality

The requisite surcharge to finance the recovery of stranded costs can be imposed in a manner that is "competitively neutral."⁹⁷ That is, the surcharge or tax can be levied in a manner so that it will not distort price signals in the market and lead to the under-consumption of electricity due to an above resource cost price.

d. Efficiency Arguments-Con

Michaels, among others, is unrelenting in his criticism of stranded cost recovery. These efficiency arguments have been presented against full recovery of stranded costs.⁹⁸

(1) An "Inefficient Tax" on End Users:

Depending on how stranded costs are recovered, the result will likely be under-consumption of power when users pay an after-tax price that exceeds the real resource cost of the power.

(2) Under-investment of Capital

To the extent that the stranded cost tax reduces energy consumption, it will reduce capital investment in more efficient power plants that would otherwise bypass less efficient utility plants.

POOLCO may also allow investor-owned utilities to drive independent generators out of business. As the Agricultural Energy Consumers Association has argued:

[T]he Commission's proposed treatment of stranded assets would enable utilities to bid their high-cost generating units into the pool at variable operating cost prices . . . since utility assets would be guaranteed their book value, the

^{96.} Baumol & Sidak, supra note 79, at 22.

^{97.} This is discussed in detail below.

^{98.} Michaels, supra note 72.

utilities could underbid their facilities into the pool, receive a transition payment for the difference, and force non-utility generators out of the market.⁹⁹

(3) "Gamesmanship"

Michaels postulates the existence of a "supply curve" for stranded investment, the supply of which will rise with the level of allowed recovery.¹⁰⁰ His concern is that politically powerful utilities will "game" the process to milk the ratepayer for costs which are not really stranded.

(4) Administrative Waste

Since stranded cost recovery must be spread out over a long period of time so as to not defeat the goal of reducing electricity costs, this means that a regulatory apparatus must be put in place to administer the program. The clear danger is that this apparatus will simply replace the existing one and save no money at all.

(5) Bond Indenture and Tax Constraints

As previously discussed, if divestiture is adopted as a means of assessing stranded costs, such vertical de-integration will raise complex problems with bond indentures and the tax treatment of the sale.

B. Stranded Liabilities

Stranded liabilities arise when the regulated utility enters into purchased power contracts approved by the PUC. If these contracts call for a price above the market clearing level in a deregulated environment, the utility is liable for the difference between the market and contract price.

As a practical matter, the major source of the problem is "PURPA power" purchased at an "avoided cost" price set well above the projected market price. At the same time, stranded liabilities can also arise with long term contracts for fuel or purchased power that have been negotiated in the regulatory environment and approved by regulators. (We discuss "stranded benefits" such as demand side management, research and development programs, and the like in Section VII below.)

1. Should Stranded Liabilities be Recovered?

"We intend to honor past commitments.... [W]e will neither seek to abrogate settlements related to nuclear power plants nor to disrupt utility contracts with Qualifying Facilities."¹⁰¹

^{99.} Agricultural Energy Consumers Ass'n, Initial Comments of Agricultural Energy Consumers Association on the Commission's Preferred Industry Structure and Its Impacts on the Agriculture Industry in California, at 3 (July 24, 1995) (submitted to CPUC) (on file with the Energy Law Journal).

^{100.} Id. at 25.

^{101. 161} Pub. Util. Rep. 4th (PUR) at 249.

a. Equity Arguments Pro and Con

In this case, the argument in equity for full recovery of stranded liabilities appears less ambiguous for stranded liabilities than stranded costs. This is because under PURPA's "must take" provision utilities have had no option but to buy the power at the established avoided cost price; they are legally, and indeed *contractually*, obligated to do so. Hence, the argument goes, they should not be penalized for doing what they were required to the position taken in both the Majority and Knight Proposals.

However, having said this, the major argument *against* full recovery of stranded liabilities is this: Because of the assurance of full recovery, some purchasers may not have negotiated as competitively as they might have. This benefited shareholders of QF subsidiaries of utilities. This may well be the case in California where two of the largest utilities in the country—PG&E and Southern California Edison—both, early on in the PURPA wars, set up unregulated subsidiaries that now compete aggressively in the QF market.

To the extent that these subsidiaries provided shareholders with fat returns through the exploitation of a PURPA price well above the utilities' true avoided cost, utility managers at both companies have been faced with an inherent conflict between aggressively lobbying to keep avoided costs down on behalf of ratepayers and keeping it up to inflate profits at their subsidiaries.¹⁰²

b. Efficiency Arguments Pro and Con

The efficiency arguments for and against the recovery of stranded liabilities are, by and large, similar to those of stranded costs. The only major difference is that opponents of such recovery see recovery as a perverse incentive to keep a huge portfolio of inefficient generating plants in operation.

C. The Politics of Stranded Costs

From an economic point of view, Bernard Black has argued correctly that "the best strategy is to ignore sunk costs, and let them fall where they may."¹⁰³ This produces optimal utility incentives to cut costs during the transition period and avoids costly rent-seeking battles over the prudence of the utility's past investments.

^{102.} This conflict has perhaps been most transparent at Southern California Edison. At one point, Edison was selling PURPA power to its own customers at inflated rates from a subsidiary called Mission Energy. The California PUC put a stop to this "self dealing," but Mission Energy still can sell to all other customers, retaining this perverse incentive for Edison management to inflate the PURPA price.

^{103.} Bernard Black, A Proposal for Implementing Retail Competition in the Electricity Industry, ELEC. J., Oct. 1994, at 58.

However, from a political perspective, Black points out that "ignoring sunk costs guarantees fight-to-death opposition from utilities that will delay retail competition and its accompanying benefits."¹⁰⁴ Black recommends "spreading the pain of paying for past mistakes" to increase political support for deregulation. The difficult question, however, is over which class of ratepayers shall this pain be spread? Shall it be spread across the backs of small residential consumers who go to the ballot box in large numbers, a much smaller number of large industrial ratepayers who nonetheless can exert tremendous political pressure through lobbying and campaign contributions to politicians, or both?

The point is simple: Any decision made by the restructuring regulator regarding stranded cost recovery is likely to be political. Unless the restructuring regulator recognizes the inherent clash of interests and crafts a "fair solution" to this problem, the result will be legislative gridlock.¹⁰⁵

D. Mechanisms to Value Stranded Costs and Liabilities

"The market value of utility assets is . . . the net present value of the stream of market revenues resulting from electricity sales from utility generation assets." 106

One of the most important decisions that the restructuring regulator will face in the resolution of the stranded costs issue is the appropriate method to actually measure such costs. There are two basic approaches.

The first is to let the market determine the value through some type of auction or sale of the stranded assets. The obvious prerequisite for this approach is a decision by the regulator to require either the divestiture or spin-off of utility assets so that such a sale can take place.

The second approach is to use an administrative proceeding. This approach assumes that the utilities will not be forced to de-integrate and that the assets remain under utility ownership.

1. The Auction Approach

The "auction approach" for valuing utility assets involves either a divestiture of generating assets to third parties or a spin-off of these assets into a subsidiary of the utility.

a. The Spin-off

With spin-off, stranded costs are simply calculated as the difference between the market value of the spun-off firm and the book value of the undepreciated generation assets, where market value equals the stock price of the subsidiary times the number of shares issued.

^{104.} Id. at 59.

^{105.} Black's ideal solution is to "spread the pain of sunk costs so that large and small customers and better-managed utilities will be winners. This will leave weaker utilities and ... demand-side management supporters (DSM) and independent power producers (IPPs) who now sell power to utilities at above-market rates—as the hopefully manageable political opposition." *Id.* at 59.

^{106. 161} Pub. Util. Rep. 4th (PUR) at 249.

The more difficult decision for the restructuring regulator, however, is determining what the appropriate time frame should be to establish the stock price. In perfectly efficient capital markets, it would be the initial price. However, in the presence of imperfect information or information lags, it may take some time for the market to process the information.

Recognizing this possibility, the Majority Proposal has suggested that it would be better to use an average price over a period of time—"for example, the first 30 or 100 trading days after the completion of the spinoff"¹⁰⁷—rather than simply the initial price.¹⁰⁸

In addition, both the Knight Proposal and the CPUC's Division of Ratepayer Advocates (DRA) argue that: "A spin-off that creates two or more generation firms from each utility's generation portfolio is preferable to a spin-off into only one company."¹⁰⁹ DRA also points out that "A spin-off has tax advantages versus asset sales [divestiture]. A spin-off can be accomplished tax-free^{"110} It is also far less complex and faster to achieve than divestiture.

b. Divestiture

Under divestiture, the utility may auction each of its generating assets individually or as a complete package. Either way, stranded costs are calculated as a net balance of the sum of the book values of the assets minus the total sum of dollars paid for the assets.

In this regard, while it might seem obvious that the logical way to calculate stranded costs in this case is to simply give the utility its "net" loss, it is also the case, at least with the CPUC case, that there seems to be some movement afoot to treat gains and losses asymmetrically.¹¹¹ Specifically, while the Knight Proposal recommends that shareholders recover 90% of all losses, the proposal also indicates that "if the net proceeds exceed the undepreciated book value, the Commission will determine at that time how to distribute the gains between shareholders and consumers."¹¹²

^{107.} Black, *supra* note 103, at 59. Please note, however, that the Majority Proposal did not recommend spin-off (or divestiture).

^{108.} In contrast, the CPUC's Division of Ratepayer Advocates argues for a much longer time frame, i.e., several years, to "markedly reduce trading strategies designed to influence short term market prices." Division of Ratepayer Advocates, *Comments on the Proposed Policy Decision and Alternate*, at A-5 (July 24, 1995) (submitted to the CPUC) [hereinafter *Division of Ratepayer Advocates*].

^{109. 161} Pub. Util. Rep. 4th (PUR) at 362. See also Division of Ratepayer Advocates, supra note 108, at 23.

^{110.} Division of Ratepayer Advocates, supra note 108, at 24.

^{111.} If a utility sells its entire portfolio of generating plants, its most inefficient plants will likely have a market value *below* book value, and the utility will be owed money for stranded cost recovery. However, it will also be true that some of the utility's more efficient plants will have a market value *above* book value so that they actually make an accounting profit on the sale.

^{112. 161} Pub. Util. Rep. 4th (PUR) at 317.

c. Gaming the Process

The Majority Proposal voices a concern that utilities will "have an incentive to 'game the process' and engineer a below-market bid."¹¹³ The argument appears to be that these utilities will want to sell their assets at a low price so that they can get a higher amount of recovery of stranded costs. However, it is difficult to understand why the utility shouldn't simply be indifferent on this issue because recovery occurs either way.

The answer to this question may lie in the differing tax implications of the utility receipt of "auction dollars" versus "stranded cost payments." Accordingly, the restructuring regulator should put this issue on the research agenda.

d. Timing of the Auction

The final major issue regarding the auction approach the restructuring regulator must consider is that of timing. The two polar options are to do it all at once or, alternatively, stretch the sale of assets out over a time frame of months or even years. At issue here is the ability of the financial markets to absorb huge transactions and the collateral danger that a flood of assets onto the market might result in an undervaluation of assets with a corresponding overvaluation of stranded costs.

For example, Roger Sant and Roger Naill have argued that "[b]ecause of the massive size of the existing utility asset base (750,000 MW, valued at about \$300 billion), it would be best to stretch out the auction of generating assets over a fairly long term—say 10 years or more."¹¹⁴ This view is consistent with the concerns voiced in the California case by CPUC Commissioner Henry Duque.¹¹⁵

2. The Administrative Proceeding Approach

Under an administrative approach, the utility retains control of its own generating assets. The restructuring regulator can use either an *ex ante* forecast price or an *ex post* pool price to measure stranded costs.

a. Ex Ante Forecast Prices

The regulator uses some forecast of future prices and the utility's market cost of capital to calculate the net present value (NPV) of the utility's generating assets. This NPV can be subtracted from the book value of the assets, and the net is the amount of stranded costs.

The Majority Proposal specifically rejected this approach because "the tremendous forecast risks associated with a one-time forecast of market

^{113. 161} Pub. Util. Rep. 4th (PUR) at 252.

^{114.} Roger W. Sant & Roger F. Naill, Let's Make Electricity Generation Competitive, ELEC. J., October 1994, at 54-55.

^{115. 161} Pub. Util. Rep. 4th (PUR) at 217.

prices involves intolerable risks for both electricity users and shareholders."¹¹⁶ The Majority Proposal also indicated the Commission was "reluctant to use a single forecast because the outcome cannot be reconciled if the forecast proves to be inaccurate to the expense of any party."¹¹⁷

The difficulty in using such an approach is underscored by the fact that the CPUC received estimates of stranded costs that differed by as much as \$40 billion dollars, precisely because of the varying assumptions used.¹¹⁸

b. Ex Post Pool Prices

The second approach is to base recovery on the actual observed pool prices. This approach would require some type of regular or annual proceeding to reconcile values *ex post*. While this approach would be far more accurate than an *ex ante* forecast, the obvious drawback is that it would entail substantial regulatory proceedings on an ongoing basis—one of the very things that restructuring is supposed to reduce or eliminate.

E. Mechanisms to Recover Stranded Costs and Liabilities

The Commission must . . . spread the [stranded cost charge] across all customers, both to decrease the costs to each customer and to prevent direct access customers from avoiding the charge due to their ability to negotiate a better price for power. In addition, these costs must be collected in a competitively neutral manner that does not adversely impact any one competitor and that is fair to all classes of ratepayers.¹¹⁹

In those cases where the restructuring regulator decides to allow utilities to recover some or all of their stranded costs, the regulator must decide on the appropriate mechanism to accomplish the task. In doing so, the regulator may seek to achieve at least three major goals—each of which unfortunately is in some conflict with the others.

First, there is the equity issue: The appropriate mechanism should fulfill the regulator's concept of what is a fair system. For example, in California, the Majority Proposal has proposed a "competitive transition charge" to collect stranded costs in a "competitively neutral manner."¹²⁰ It has proposed "to impose the transition cost charges as an equal percentage surcharge on the bill of each customer of the utility providing electric distribution."¹²¹

The second goal involves minimizing the economic inefficiency that imposition of the stranded cost fee or tax might impose. The issue here is that most taxes that the government imposes will alter either the behavior of consumers or producers. In such cases, consumption and production are typically lower and price is higher than it would otherwise be in a perfectly

^{116. 161} Pub. Util. Rep. 4th (PUR) at 250.

^{117. 161} Pub. Util. Rep. 4th (PUR) at 250.

^{118. 161} Pub. Util. Rep. 4th (PUR) at 250.

^{119. 161} Pub. Util. Rep. 4th (PUR) at 376.

^{120. 161} Pub. Util. Rep. 4th (PUR) at 253.

^{121. 161} Pub. Util. Rep. 4th (PUR) at 253.

competitive market. The result is an allocative inefficiency commonly known in economics as a "dead weight loss." ¹²²

Finally, the third goal is to minimize any negative impacts on competition in the market. The important point here is that all participants in the market should receive appropriate competitive price signals. The primary danger is that an inappropriately administered tax may shield an inefficient utility from a lower cost, more efficient producer. Alternatively, it may make an independent producer seem competitive when, in fact, it is not.

The inherent conflict in simultaneously achieving these three goals poses a classic "efficiency-equity" tradeoff for the restructuring regulator. For example, the most efficient type of tax that economists have identified is a "head tax" or "poll tax" assessed as a flat levy regardless of one's income or consumption. However, such taxes are highly regressive and, not coincidentally, politically unpopular.

Similarly, in an alternative known as "Ramsay Pricing," the dead weight loss is minimized when those with the most inelastic demand pay the highest tax.¹²³ However, as with a head tax, this method tends to be highly regressive. In a utility context, Ramsay pricing would dictate that a disproportionate share of the burden fall on small residential consumers whose demand is the most inelastic of the customer classes.

Within the context of the above three goals, we can evaluate four of the major mechanisms that the restructuring regulator might choose from to recover stranded costs. These mechanisms include: (1) an access charge for customers, (2) an exit fee, (3) an entry fee, or (4) a transmission surcharge.

1. Access Charge Paid by Every Electricity Customer

This charge might be a flat rate which is the same across every customer class or within each customer class. Alternatively, the regulator might develop a schedule of access charges based on the capacity needed to serve the customer or the level of consumption.

In general, a flat rate access charge irrespective of consumption levels will be the most economically efficient tax. Analogous to a head tax, such a rate does not change the consumption behavior of the consumer and hence introduces no "tax wedge" of dead weight loss into the market. However, like any head tax, such a flat rate is highly regressive and may raise political problems for the regulator.

Such problems notwithstanding, both the Knight and Majority Proposals have endorsed a variation on this mechanism designed to maintain the current distribution of the rate burden. Under the rubric of a "Competition Transition Charge" (CTC), the Commission will "impose the transition

^{122.} For these reasons, the CPUC's Division of Ratepayer Advocates recommends: "Charges for transition costs should be unbundled from other electric service costs in order to minimize distortions in pricing and customer decisions." *Division of Ratepayer Advocates, supra* note 108, at 15.

^{123.} This proposition was first set forth in Frank P. Ramsay, A Contribution to the Theory of Taxation, 37 ECON. J. 47 (1927).

[stranded] cost charges as an equal percentage surcharge on the bill of each customer of the utility providing electric distribution."¹²⁴ Thus, "if residential customers pay 25 percent of a utility's generation costs today, then under this proposal, residential customers as a class pay 25 percent of the utility's designated CTC."¹²⁵

2. An Entry Fee Paid by Any Competitor With the Utility

The underlying motivation here is to level the playing field between a utility burdened with stranded cost and a new entrant into the market. The idea is to charge the new entrant (or its customers) a fee to help recover all or some of the stranded costs that the new entrant will impose on the utility.

From an efficiency point of view, such an entry fee may constitute a significant "barrier to entry" into the market. Depending on the size of the fee, it may discourage investment, reduce the number of competitors, and lead both to an under supply of low cost power and an increase in the probability of market concentration and monopoly pricing.

From a legal point of view, the ability to impose such a fee has also come into question in the aftermath of the July 12, 1994, decision by the United States Court of Appeals for the District of Columbia in *Cajun Electric Power Cooperative, Inc. v. FERC.*¹²⁶ The background of the case is instructive.

Entergy Services Inc., on behalf of four of its subsidiaries,¹²⁷ submitted three tariffs to the FERC for approval pursuant to section 205 of the Federal Power Act (FPA).¹²⁸ Two of these tariffs were rate schedules to allow Entergy to sell wholesale power at market-based, rather than cost-based, rates. However, the third tariff was designed to allow Entergy to recover any stranded investment costs associated with opening its transmission grid to competitors in the generation market. As explained by the court of appeals: ". . . if Entergy loses a customer of generation capacity to a competitor but the customer continues to employ Entergy's transmission grid, the charge for transmission will include not only costs directly associated with it, but also the cost of Entergy's generation capacity idled by the switch."¹²⁹

In rejecting this tariff, the Court indicated that "[t]aken as a whole, the TST [tariff] seems to provide Entergy with the means to stifle the very competition it purports to create" and found that such a tariff constitutes

^{124. 161} Pub. Util. Rep. 4th (PUR) at 253.

^{125. 161} Pub. Util. Rep. 4th (PUR) at 377.

^{126. 28} F.3d 173 (D.C. Cir. 1994) (per curiam). See James D. Pembroke, After "Cajun", What Next For Stranded Costs?, ELEC. J., Oct. 1994, at 42-48.

^{127.} Arkansas Power & Light, Louisiana Power & Light, Mississippi Power & Light, and New Orleans Public Service, Inc.

^{128. 16} U.S.C. §§ 824d, 824e (1988).

^{129.} Cajun, 28 F.3d at 177.

an illegal "tying arrangement."¹³⁰ As James Pembroke observed in his analysis of the decision:

[T]he Court likened the stranded investment provision to the sword of Damocles dangling over the negotiating table. If a seller in competition with Entergy for a power sale does not know what its delivered cost will be until a stranded investment hearing is concluded, that seller faces, in the words of the Court, "deal-killing transactional costs and uncertainties."¹³¹

In the wake of *Cajun*, there is great uncertainty about its implications for the ability of the FERC to mandate stranded cost recovery as part of its tariff authority, and this issue is likely to be a topic of further discussion for years to come.

3. An Exit Fee For Those Customers Leaving Utility's System

The intent of an exit fee for electricity buyers who seek to "bypass" their utility distribution company is the same as the intent of an access charge for sellers who invite the bypass. The major difference is that in this case, the customer actually pays the fee rather than the seller.

From an inefficiency point of view, the same critique of an access fee applies, namely, that such an exit fee might discourage competition and shield inefficient utility suppliers from efficient third party generators.

4. A Transmission Surcharge

In this option, once stranded costs are calculated, a surcharge can be added on a per unit basis to all electricity that transits the grid to cover the costs. On fairness grounds, such a surcharge has some appeal because by taxing the grid, universal sharing by all customers of the stranded cost burden is assured. On the other hand, such a sharing effectively saddles all consumers, not just the ones benefiting directly from open access.

Such a surcharge would also be relatively easy to administer. As to whether or not such a surcharge might discourage competition and result in economic efficiency is a matter of some debate.

On the one hand, William Baumol and Gregory Sidak have argued that an appropriately administered surcharge can prevent less efficient producers from bypassing more efficient utility generation.¹³² On the other hand, it should be equally clear that an inappropriately set transmission surcharge will in fact shield the utility from more efficient competitors.

V. RESTRUCTURING THE ELECTRICITY TRANSMISSION MARKET

"[M]arket power through control of transmission is the single greatest impediment to competition. Unquestionably, this market power ... can be used ... to block competition . . . [or favor] a transmission owner's own generation."¹³³

^{130.} Pembroke, supra note 126, at 47.

^{131.} Pembroke, supra note 126, at 47.

^{132.} See BAUMOL & SIDAK, supra note 74, at 101.

^{133.} Henney, supra note 23, at 29 (quoting from the FERC's Mega-NOPR, supra note 2).

The second major feature of restructuring the electricity industry is open access by all competitors to the transmission grid. In this section, we examine why an open transmission grid with competitive pricing is absolutely essential to the success of any restructuring effort, explain how the FERC has taken the historical lead in moving towards such open access, and explore several difficult jurisdictional issues that arise between the FERC and the state PUCs.

Perhaps most importantly, we also examine the various competing structural models that have been proposed for operation of the grid under deregulation. These models include two radically different approaches, one known as the "Direct Access" or "bilateral contract" model and the other known as "POOLCO."

At issue in the proper choice of models for the restructuring regulator are three important measures of market performance: economic efficiency, system reliability, and equity across customer classes. As we shall see below, this last issue in equity is the most politically charged because the two models have potentially far-reaching implications for the level of rates across different classes of customers. The conventional wisdom holds that the Direct Access model favors big customers at the expense of the small.

A. Open Transmission Access is a Necessary Condition of Effective Restructuring

An open transmission grid with services priced at competitive rates is an absolutely essential component of a successful restructuring effort. Without such open access, the benefits of competition cannot flow through to ratepayers.

1. Transmission is a Natural Monopoly

While there is some debate over whether electricity generation is a competitive market, virtually everyone agrees that the electricity transmission grid is a "natural monopoly" characterized by economies of both scale and scope and high entry barriers. Accordingly, whoever owns the grid is likely to engage in monopoly pricing if transmission were unregulated. At least from the economist's perspective, it is for this reason that electricity transmission rates have historically been regulated.¹³⁴

As a general rule, vertically integrated investor owned utilities (IOUs) own the transmission grids within their service territories and therefore control access to this grid. In such cases, it should be especially clear why the deregulation of electricity generation will likely not yield any benefits to ratepayers in the absence of an open access policy.

^{134.} See, e.g., Gunnar E. Jorgensen & Frank A. Felder, New England Power Pool: A Bridge to Competition, PUB. UTILS. FORT., July 1, 1995, at 47. "Generation is no longer considered by most a natural monopoly. But the underlying economics of the electricity [transmission] network remain the same." Id. Although wireless transmission looms on some distant technological horizon, and photovoltaics and a decentralized delivery mode loom as future competitors, no one in the current debate disputes this fact.

To see this, suppose a non-utility generator (NUG) outside the service territory of an IOU wants to sell power to a customer inside the utility's territory and suppose further that the utility owns the transmission grid within its territory. Even if the NUG can offer power at several cents below the utility's cost, the utility can offset its competitive disadvantage simply by charging a higher rate for access to its transmission grid.¹³⁵ This ability to "limit price" not only prevents the benefits of competition from flowing through to ratepayers but, over the longer term, discourages entry of independent power producers into the market.

Recognizing this simple principle, the FERC has sought to open up the nation's transmission grid to wholesale "wheeling."¹³⁶ With wholesale wheeling, the transmission grid becomes a "common carrier" and buyers and sellers involved in wholesale transactions have access to the grid at fair and non-discriminatory rates.

The FERC's effort to open the grid was given a great boost by the passage of the Energy Policy Act of 1992.¹³⁷ The EPAct greatly expanded the FERC's authority to order utilities to "wheel" power through their grids for third parties. The Act also created a whole new class of Exempt Wholesale Generators (EWGs) that can compete with fewer regulatory constraints in the emerging electricity generation market. In the wake of passage of the Act, the FERC has moved aggressively to open the transmission grid. As discussed previously, the latest mechanism it has employed is the "Mega-NOPR."

B. The Competing Transmission Access Models

The restructuring debate has focused on two broad models for delivery of electricity known as "Direct Access" and POOLCO. Under POOLCO, buyers and sellers trade in a centralized power pool. This pool sets a transparent market clearing price and dispatches power according to the principles of economic dispatch. In this model, the grid functions as a "contract network" that dispatches power on an integrated network basis.

In contrast, under Direct Access, electricity consumers are able to negotiate directly with electricity sellers such as utilities and independent power producers. In this model, all sellers have open and non-discriminatory access to the transmission grid, and the grid simply functions as a "contract path" to consummate transactions with buyers.

This distinction between a contract path and a network path is crucial to the Direct Access versus POOLCO debate. In theory, with a contract path, a seller enters into a contract for a specified amount of electricity with a buyer. The seller then ships this amount of electricity directly from the plant over the grid to the buyer.

^{135.} For a discussion of the optimal tariff, see BAUMOL & SIDAK, supra note 74, ch. 10.

^{136.} For discussion and an historical review, see Santa & Sikora, supra note 20, at 273-321.

^{137.} EPAct, supra note 19.

To POOLCO proponents, such a contract path is a "fiction" ¹³⁸ that can only be accommodated when the grid is uncongested. In the presence of congestion, electricity moves across the grid in a complex "network interaction or 'loop flow."¹³⁹ In addition, there are "many interacting, nonlinear constraints that limit operations in power systems."¹⁴⁰ As a practical matter, this means that power from one plant cannot be moved with certainty to a contracted customer. Rather, power must be transmitted over the contract network taking into account this loop flow effect and other interactions. This, in turn, means, if POOLCO proponents are correct, that the Direct Access model is not technically feasible in the presence of grid congestion—a point we shall return to below.

Both the POOLCO and Direct Access models recognize four major players in the market: (1) Electricity suppliers, including investor owned utilities and independent power producers, (2) Electricity buyers, (3) "Middle men" such as brokers, merchants, and traders that will coordinate sales between the various parties and the pool, and (4) the system operators and dispatchers whose job it is to coordinate generation and transmission and insure reliability. Both models also recognize that there must be an "Independent System Operator" or ISO that manages the power pool---but the models differ radically on the scope of the ISO's responsibilities.

Implicit in the POOLCO versus Direct Access debate are four fundamental issues for the restructuring regulator: (1) Should the pool be mandatory or voluntary? (2) Should power be dispatched on the basis of a "contract path" or a "contract network?" (3) How should problems such as transmission congestion, line losses and loopflow be dealt with? (4) What should the role of the ISO be? Common to both models is the overriding jurisdictional issue of how the authority now vested in the FERC to regulate transmission grids fits into each model.

Direct Access is championed by large industrial consumers¹⁴¹ and free market conservatives and is rapidly gaining favor on the East Coast, principally in New England.¹⁴² This model features "contract dispatch" over a contract path, a voluntary pool, a minimal role for the ISO, and market mechanisms to deal with issues such as transmission congestion, line losses and loop flow. It is this model that is embraced by the Knight Proposal.

In contrast, the POOLCO model is being championed on the West Coast by the Majority Proposal. It features "least cost dispatch" over a contract network, a mandatory pool, an expansive role for the ISO, and a centralized solution to transmission congestion.

^{138.} William Hogan, *Electricity Transmission and Emerging Competition*, 133 PUB. UTILS. FORT. 13, July 1, 1995, at 34.

¹**3**9. Id.

^{140.} Id.

^{141.} The list of Direct Access supporters consists of some of the largest electricity consumers in the nation, including Ford Motor Company, GM Hughes Electronics, Owens Corning, Chevron, 3M, Georgia-Pacific and General Mills. See 161 Pub. Util. Rep. 4th (PUR) at 358.

^{142.} For discussion, see Neil Talbot, *NE Warms to Competition*, 8 ELEC. J. 6, July 1995, at 13. For example, the New Hampshire legislature has set up a retail wheeling pilot project while Massachusetts regulators are moving towards the "direct access paradigm."
1. Wholesale versus Retail Wheeling

Before plunging into the pros and cons of POOLCO and Direct Access, it is first useful to note that in the Direct Access model, bilateral negotiations between buyers and sellers can occur at the wholesale level via the transmission grid. For example, municipal utilities might purchase power from generators and "wheel" that wholesale power over the transmission grid for ultimate distribution to their customers through their monopoly distribution grid.

Such direct access can also involve retail transactions between generators and end-users ranging from large industrial consumers to small residential consumers. However, these types of transactions not only involve wholesale wheeling over the transmission grid but "retail wheeling" over the *distribution* grid as well. Thus, in the Direct Access model with retail wheeling, the distribution grid also becomes a common carrier.

In this section, we shall focus primarily on transmission issues. However, in evaluating the two competing transmission models, we will assume that when we are talking about Direct Access, there may be both wholesale and retail wheeling involved. We shall also postpone a fuller discussion of the implications of retail wheeling until Section V below on distribution market issues.

2. The Direct Access (Bilateral) Model

In this model, the ISO has a minimal role and the transmission grid serves no other purpose than to act as a "contract path" for transactions between buyers and sellers of electricity.¹⁴³ The ISO operates the grid, but the function of the ISO is limited to ensuring that transactions between buyers and sellers are fulfilled.

In this model, buyers and sellers quite literally have "direct access" to one another in the marketplace. Sellers have the responsibility of finding buyers and *vice versa*. The function of the grid is to consummate these transactions once they are agreed to.

Once agreement is reached, the contracting parties notify the ISO of the power flows they want on the system. The ISO then uses "contract dispatch" to transmit power. That is, power flows are determined strictly on the basis of orders from buyers and sellers—not on "least cost dispatch" or "economic dispatch" which queues generators by costs.

a. Pros

The Knight Proposal provides a fairly comprehensive summary of the major arguments—reprised below—in favor of Direct Access. The hallmark of many of these arguments is that they are, by and large, based on assertions and beliefs about the nature of the free market rather than on

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^{143.} The ISO must also maintain a minimum level of "spinning reserves" to ensure grid reliability and power quality.

any hard data or comprehensive analysis to support them.¹⁴⁴ Accordingly, each of these arguments might usefully be put on the restructuring regulator's research agenda as an important testable hypothesis.

(1) Direct Access Unleashes the Power of the Free Market

Knight argues for Direct Access because it will "*reduce* government intervention and regulation and allow for *market-based* interactions."¹⁴⁵ In his view:

A market is more effective when buyers and sellers are capable of transacting with each other directly. Allowing customers to choose from an array of goods and services provides a better opportunity for them to find a service that best suits their needs. Lower costs will be achieved when customers have alternatives among suppliers and providers and can compare their prices and services. This is the model on which the rest of our economy is based. The time is ripe for electricity to join that model. This proposal provides full customer choice, which results in increased efficiency.¹⁴⁶

This view is basically consistent with a free market ideology that runs historically from Adam Smith's invisible hand to Milton Friedman's Chicago brand of modern laissez faire. The policy questions implicit in this view are: Will customers have effective choice? Will the market actually yield lower rates?

Critics of this free market view are quick to note that when these questions were tested in the deregulated United Kingdom electricity market, the answers were not encouraging: rates increased and real choice for most consumers never materialized.¹⁴⁷

(2) Direct Access Increases Technical Efficiency

Technical inefficiencies result when a firm or industry operates above its potential minimum cost curve. Knight believes that the technical inefficiencies that typically plague regulated industries such as electricity will be weeded out by the pressures of competition:

Direct access will lead to a vast array of savings opportunities that are currently either ignored or otherwise foregone under a retail, regulated monopoly structure. Suppliers . . . will examine each component of retail electric service to find potential cost savings and other additional consumer benefits . . . [C]onsumer pressure will assuredly result in pressure on the EDC [the distribution company] to minimize the costs of the remaining monopoly services it offers and minimize transaction costs.¹⁴⁸

^{144.} This is also true of the much broader restructuring debate.

^{145. 161} Pub. Util. Rep. 4th (PUR) at 349 (emphasis in original).

^{146. 161} Pub. Util. Rep. 4th (PUR) at 352.

^{147.} See, e.g., Woolf, supra note 48.

^{148. 161} Pub. Util. Rep. 4th (PUR) at 352-353.

ELECTRIC RESTRUCTURING

(3) Direct Access Leads to Efficient Long Term Investment

Knight also takes as an article of faith what should be an obvious item on the restructuring regulator's research agenda, namely that: "Allowing bilateral contracts between suppliers and customers will create the proper incentives for generators to make long term investments on an economically efficient basis."¹⁴⁹

(4) Direct Access Results in De Facto Least Cost Dispatch

One of the major benefits of power pools and one of the major reasons why they have been formed across the country is so that power generation may be distributed through economic or "least cost" dispatch. Under least cost dispatch, the pool operator has the responsibility of determining the order of dispatch according to marginal cost, with the least cost mix of plants used first.¹⁵⁰

Knight asserts that the Direct Access model will result in least cost dispatch even though power is dispatched on a "contract dispatch" basis. He claims that "consumers would strive to find the lowest cost producer of power, while producers would strive to minimize their costs to attract customers. This dynamic will create an electric power industry that offers the lowest cost power with the highest value to consumers."¹⁵¹

(5) Direct Access is Fair to All Consumers

It can be easily shown that in the POOLCO framework in which there is only one transparent market clearing price, all sellers whose average and marginal costs are lower than the market clearing price will earn what economists call "inframarginal rents." These inframarginal rents are equal to the difference between the market price and the seller's costs.

Proponents of Direct Access argue, however, that in their model, consumers will be able to negotiate some of these inframarginal rents away from the lower cost producers. As Knight has put it: "[U]nder direct access, some or all of the benefits tied to the low-cost provider flow directly to the customer, while the mandatory pool [POOLCO], because of its single price feature, siphons off the benefits for the supplier."¹⁵²

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^{149. 161} Pub. Util. Rep. 4th (PUR) at 353 (paraphrasing comments by the California Manufacturers Ass'n (Round IV) August 24, 1994, at 3).

^{150.} Balancing load and other factors make this a more complicated process, but the central proposition holds.

^{151. 161} Pub. Util. Rep. 4th (PUR) at 353.

^{152. 161} Pub. Util. Rep. 4th (PUR) at 355 (emphasis in original).

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(6) Direct Access Develops Forward Markets

The Direct Access model will facilitate the development of a "forward market." Such a market "enables participants to plan effectively, and effective planning enhances market efficiency through the distribution chain from production to consumption."¹⁵³ Forward markets also "send a signal that new capacity is needed, or that demand has or will drop in advance of supply/demand imbalances."¹⁵⁴

(7) Direct Access Involves Fewer Jurisdictional Complications

The Division of Ratepayer Advocates has argued: "Under direct access, the CPUC would play the role of 'market cop' assuring a level playing field for new market entrants. FERC involvement would be greatly diminished."¹⁵⁵ In contrast, as discussed below, under POOLCO, the FERC would have broad authority over all aspects of the pool, including rates and conditions of service.

b. Cons

Critics of the Direct Access model find fault with it on at least three major measures of market performance: economic efficiency, reliability, and equity.

(1) Direct Access Results in Technical Inefficiency

Critics of the Direct Access model dispute Knight and claim that the model cannot accommodate economic dispatch, and, therefore, use of the model means forgoing its quite substantial benefits. The argument is straightforward: "With contract dispatch, which is the rule in the [Direct Access] model, needs of generators cannot be matched with the capabilities of the transmission system."¹⁵⁶ As a result, dispatch occurs on an *ad hoc* basis according to the pattern of contracts rather than according to an economic merit order. Further complicating matters is the fact that the price of generation negotiated in the contracts may not take into consideration external costs to the network that arise from congestion, losses, and loop-

^{153. 161} Pub. Util. Rep. 4th (PUR) at 355 (quoting Comments by the New York Mercantile Exchange on Market Institutions in the Restructured Electric Utility Industry (submitted to the CPUC) (July 26, 1994) (on file with author).

^{154. 161} Pub. Util. Rep. 4th (PUR) at 355.

^{155.} Division of Ratepayer Advocates, supra note 108, at 27. It is an open question, however, as to how FERC's role would actually be diminished since it will still regulate transmission contracts.

^{156.} Michael Shames, Comments of Utility Consumers' Action Network in Response to Proposed Majority and Minority Decisions (July 24, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

flow.¹⁵⁷ For these reasons, actual generation dispatched may embody a technically inefficient cost curve above the minimum achievable.¹⁵⁸

(2) Direct Access Ignores the Laws of Physics

The real system is a network that requires careful coordination and may behave in ways that have nothing to do with moving power from one location to another along a path.¹⁵⁹

Perhaps the most significant criticism of the Direct Access model and one that has not yet been adequately answered by its supporters is the issue of system reliability and integrity. From a technical point of view, electricity is a unique commodity that does not conform to the underlying "contract path" assumption of the Direct Access model but rather is more consistent with the "contract network" of the POOLCO model. As Michael Shames has put it:

Bilateral transmission contracts, which purport to create a point-to-point contract path for transmission, ignore the dynamics of grid physics, including losses and loop flows. A series of physical point-to-point bilateral contracts, which cannot account for the dynamic nature of power system flows, creates a situation not unlike expecting the traffic to flow in San Francisco on a week day at noon with all the traffic lights turned off.¹⁶⁰

It is the position of the most ardent proponents of the POOLCO that this is a fatal characteristic which makes Direct Access technically infeasible. To date, this concern has not been adequately addressed by supporters of the Direct Access model.¹⁶¹ It is a question that must rank very high on the restructuring regulator's research agenda.

In this regard, a key issue will be the level of congestion in the grid. According to POOLCO proponent William Hogan, "When the system is [uncongested], anything can be done and the contract-path fiction can be accommodated. However, a constrained system leads to a dramatic result totally at odds with the contract-path model."¹⁶²

In response to this key criticism, Direct Access opponents have argued that there is a market-based solution to this whole problem:

[A] secondary market approach should ultimately be considered as a congestion management mechanism. That is, through a real time information net-

162. Hogan, supra note 138, at 34.

^{157.} For further discussion, see *id.* at 39-40.

^{158.} One counter argument to this loss in technical inefficiency made by Direct Access proponents is that competition in a bilateral market will drive prices substantially down. At these lower prices, the gains in allocative efficiency will outweigh any losses in technical efficiency so that the net result of Direct Access is still positive.

^{159.} Hogan, supra note 138, at 35.

^{160.} Michael Shames, *Personal Communication* (June 22, 1995) (submitted to the CPUC) (on file with the *Energy Law Journal*).

^{161.} To explore this issue, the CPUC held a technical workshop on January 17, 1995. The Knight Proposal argues that the results of the workshop supports Knight's view that "system integrity could be maintained under an electric industry structured through bilateral contracts, particularly because the electric system *currently* operates safely and reliably with a wide variety of bilateral arrangements." 161 Pub. Util. Rep. 4th (PUR) at 358 (emphasis in original).

work, firm suppliers would be able to react to transmission congestion at a given point on the system by submitting bids. Those suppliers preferring to pay a premium for the right to move their power across the grid during a congestion period would compensate suppliers willing to accept interruption.¹⁶³

(3) Direct Access is Unfair to Small Consumers

"In the Direct Access proposal, there is little chance that the millions of smaller electric consumers in California will share in the benefits of a competitive generation market in any meaningful way."¹⁶⁴

Critics of the Direct Access model argue, with considerable economic evidence to support their case, that the model will "unfairly" discriminate against smaller consumers. This is a potentially serious defect of the Direct Access model for political, if not for economic, reasons because residential ratepayers have far more clout at the ballot box than industrial customers.

The equity argument is straightforward and stems from the fact that the model does not yield a set of "transparent prices" available to all consumers. The argument is based on two facts of economic life best demonstrated by comparing the behavior of large industrial customers versus small residential customers.

(a) The Ramsay Pricing Problem

As a rule, larger customers will have more elastic demands for electricity than smaller customers and therefore will have more bargaining power. In a world of "Ramsay Pricing" in which sellers can be expected to exploit differences in demand elasticities in their pricing, smaller customers will pay more.¹⁶⁵

(b) The Imperfect Information and Transactions Costs Problems

In a world of imperfect information with significant transaction costs, larger customers with more resources to fathom the market will have better access to bargains than smaller customers.

In their defense, proponents of the bilateral model argue that the market will take care of both of these problems by creating institutions that will

^{163.} California Manufacturers Ass'n, Comments of the California Manufacturers Association on Proposed Policy Decision, (July 21, 1995) (submitted to the CPUC) (on file with the Energy Law Journal). The Association argues that: "This is a non-issue. The utilities currently handle numerous bilateral transactions on behalf of municipal and wholesale customers, and there is no evidence even to suggest that the utilities cannot accommodate several hundred additional bilateral contracts in the near term."

^{164.} Towards Utility Rate Normalization, Comments of Towards Utility Rate Normalization on the Competing Policy Decisions for the Restructuring of California's Electric Services Industry, (July 24, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

^{165.} For example, more elastic large industrial customers will, in many cases, have the option of self-generating whereas this option is not available to a small residential customer.

aggregate smaller customers in large bargaining units.¹⁶⁶ It should also be pointed out at least one utility in California, Pacific Gas & Electric, has proposed a bulletin board service that will publicly post as-bid prices as part of a solution to increase the flow of information in the market.

3. The Pure POOLCO Model

"The key to open, efficient transmission access in a network lies in coordination through a pool-based market that can support emerging competition."¹⁶⁷

In its pure form, the POOLCO model functions simultaneously as an auctioneer, a power dispatcher, and a bill collector. The ISO's function is to take bids from buyers and sellers in the spot market, establish a market clearing price, and schedule power according to least cost dispatch principles as well as maintain reliability. As the Majority Proposal has described it:

The pool will provide independent, open and nondiscriminatory access to the transmission grid, while . . . complying with all existing standards to ensure continued reliability. The pool will have two distinct functions. First, it will function as the operator of the electric grid system by coordinating dispatch and delivery of energy; second, it will act as a clearing house for all electricity transactions. The pool will implement uniform, efficient, and transparent pricing rules and publish a market price for electricity in specific time increments.¹⁶⁸

The pure POOLCO model is a useful theoretical construct to discuss because it sheds light on the various arguments pro and con for its use. However, in practice, a variation on POOLCO that includes a "contracts for differences" (CFDs) component is the one that, at least thus far, appears to have gained the most favor. This POOLCO with CFDs currently is in use in Great Britain and has been proposed by the CPUC. We shall discuss this variant below, but first, it is useful to examine the pros and cons of pure POOLCO.

a. Pros

We have indicated above that POOLCO proponents believe that a centralized dispatch system featuring a "network path" is necessary because electricity cannot be made to follow a "contract path," particularly in the presence of transmission congestion. Besides this important technical argument, other arguments in support of POOLCO include:

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^{166. 161} Pub. Util. Rep. 4th (PUR) at 354. Knight points out that the existing Electricity Distribution Company (EDC) as a:

large, sophisticated buyer of energy with a long history of buying in the market for power, would be extremely well-positioned to lock up such [low cost] deals for consumers who choose to remain with the EDC... More important, however, competition, and the threat of losing customers would offer the EDC with [sic] a considerably stronger incentive to flow most, or all, of these benefits to its customers.

^{167.} Hogan, supra note 138, at 36.

^{168. 161} Pub. Util. Rep. 4th (PUR) at 239.

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(1) POOLCO Results in Efficient Least Cost Dispatch

As its leading proponent, William Hogan, has argued, one of the primary economic benefits of POOLCO is that it facilitates least cost dispatch "With the proper design of incentives for market bidding, . . . [least cost dispatch] will replicate the results of a competitive spot market for which the marginal costs would be equal to the market-clearing prices."¹⁶⁹

(2) POOLCO is Fair Because it Protects All Consumers

"Our objective is to make competitive options available to all classes of customers and to avoid strategies that restrict or ration the benefits of the new market structure to the few."¹⁷⁰

A system of transparent prices will substantially reduce the gap between the average cost and marginal price that might otherwise occur with Direct Access. As Michael Shames has put it, "without this greater transparency in the spot generation and transmission constraint prices, only the giants in the electricity market would be able to play. U.S. common stock trading is a useful analogy to trading in the restructured electricity market. On Wall Street, only large investors, brokerage houses, and mutual funds can afford to trade on a day-to-day basis."¹⁷¹

b. Cons

"This is the very type of "command and control" regulation which has contributed so significantly to the exorbitant electric rates under which California consumers are suffering."¹⁷²

Opponents of POOLCO object to it on both economic and ideological grounds and offer these reasons.

(1) POOLCO is the Camel's Nose Under the Price Control Tent

"A single, mandatory pool is a tempting target for regulatory intervention."¹⁷³

Because POOLCO involves a centralized bureaucracy that coordinates pricing information, opponents fear that as soon as prices begin to rise in the market, POOLCO will be used to re-regulate electricity prices. In support of this fear, they point to the experience in Great Britain where

^{169.} William Hogan, Electric Transmission: A New Model for Old Principles, ELEC. J., Mar. 1993, at 26.

^{170. 161} Pub. Util. Rep. 4th (PUR) at 241.

^{171.} Shames, supra note 160.

^{172. 161} Pub. Util. Rep. 4th (PUR) at 353.

^{173.} California Energy Comm'n, Pacificorp's Opening Comments in Regard to the Commission's Proposed Policy Decision (July 24, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

price controls were instituted in a POOLCO framework a few short years after electricity deregulation of generation.¹⁷⁴

(2) POOLCO Will Not Result in Economic Dispatch

This problem relates to the issue of stranded liabilities discussed above and the high cost qualifying facility (QF) power that utilities must take under PURPA. Specifically, suppose the restructuring regulator adopts a policy that this high cost power will continue to be generated and that the utility must take it and be compensated for it. Then, the pool will be used to dispatch such power not according to least cost, but rather according to contractual obligations.¹⁷⁵

A variation on this argument is that, with existing power pools, "dispatching is already very efficiently performed by utilities. In reality, there can be only little, if any cost savings realized from redispatch."¹⁷⁶

(3) POOLCO is Infeasible Because the FERC Won't Cooperate

The FERC has jurisdiction over prices and rates charged in the wholesale market to the pool and may not fully cooperate with the state PUCs to implement POOLCO. As the California City-County Street Light Association has warned the CPUC about the prospects for "cooperative federalism, POOLCO invites a confusion in the market place between state and federal regulation of the electric utility industry. Let's not be too sanguine about future cooperation between the FERC and the CPUC. Does anyone believe there won't be bureaucratic turf wars between these two well-intentioned agencies?"¹⁷⁷

The important collateral issues here are whether any PUC can even order the establishment of a pool and, if it does, will "the FERC have the authority and *willingness* to regulate pools in the manner contemplated by [the restructuring regulator]."¹⁷⁸ This is a particularly important issue in California (or any state) where the nature of the transmission system and its interconnected ties with other states means that the FERC will unques-

^{174.} However, it must be noted that in the Great Britain example, the government intervened because the generation market developed into a duopoly plagued by rapidly rising prices. See Woolf, supra note 48, for discussion.

^{175. 161} Pub. Util. Rep. 4th (PUR) at 354. As Knight argues, "Economic dispatch is not guaranteed through the pool structure [M]any wholesale pool models would require "must-take" ... provisions for QF power."

^{176.} California Energy Comm'n, *Comments of the Sierra Pacific Power Company on Restructuring* (July 24, 1995) (submitted to the CPUC) (on file with the *Energy Law Journal*).

^{177.} California City-County Street Light Ass'n, supra note 94, at 10-11.

^{178.} California Energy Comm'n, Comments of Electric Clearinghouse, Inc. on Electric Restructuring Proposals (July 24, 1995) (emphasis added) (submitted to the CPUC) (on file with the Energy Law Journal).

tionably have jurisdiction¹⁷⁹ over all aspects of the pool, including rates, terms and conditions of operation and design.¹⁸⁰

Equally important is whether a PUC can use its jurisdictional powers to set up a mandatory pool. The problem is that for POOLCO to function properly, it must be mandatory—as the Majority Proposal dictates. However, as the Proposal acknowledges, it is a difficult legal question as to whether or not the FERC, at the behest of a PUC such as that of California, can require a mandatory pool.¹⁸¹

On the one hand, the Federal Power Act (FPA) authorizes the FERC, at the request of a state PUC, to order public utilities to open their grid.¹⁸² On the other hand, the FERC has also indicated that it cannot order involuntary participation in a pool.¹⁸³ Such pools must be voluntary in nature.^{184,185}

(4) POOLCO is Unfair Because It Will Enrich Electricity Producers

As indicated above, low cost suppliers will capture all the inframarginal rents associated with the transactions at spot market prices. In essence, each supplier will receive the market clearing price. This will yield large windfalls to utilities and generators with costs below the market clearing price. Without negotiation in the market, it will be impossible for consumers to capture any of these "inframarginal rents." This example is offered in comments submitted to the CPUC by the California Large Energy Consumers Association:

Consider a simplified operation of the majority's pool in which 5 bidders offer to sell 100 MWs each at prices of 3, 4, 5, 6 and 7 cents/kWh. If the ISO [independent system operator] determines there is need for only 300 MW for the period in question, it would award bids to the three lowest bidders (the 3,

181. "We are mindful that requiring utilities to participate in the pool raises a question of first impression and implicates the FERC's jurisdiction ... [T]he benefits of the pool ... are worth the risk of litigation on this issue "161 Pub. Util. Rep. 4th (PUR) at 240.

182. FPA § 202(b), 16 U.S.C. § 824a(b) (1994). See also FPC v. Florida Power & Light Co., 404 U.S. 453 (1972); New England Power Co. v. FPC, 349 F.2d 258, 263 (1st Cir. 1965).

183. See Mid-Continental Area Power Pool, 58 F.P.C. 2622, 2637 (1977), aff d sub nom., Central Iowa Power Coop. v. FERC, 606 F.2d 1156 (D.C. Cir. 1979).

184. See Central Iowa Power Coop. v. FERC, 606 F.2d at 1167-68. See Comments of Southern California Edison (submitted to the CPUC) (on file with the Energy Law Journal); see also 16 U.S.C. § 824a(a). As Pacific Gas & Electric argues: "FERC cannot use section 202 (b) to order involuntary utility participation in an on-going complex power pool . . ." Comments of Pacific Gas and Electric Company, supra note 59, at 16.

185. As Pacific Gas & Electric points out, at least in California, "the question of jurisdiction may be academic if the electric utilities subject to the jurisdiction of the Commission are prepared to move ahead voluntarily." *Comments of Pacific Gas and Electric Company, supra* note 59, at 16.

^{179.} Under Section 201 of the Federal Power Act (FPA), the FERC has both exclusive and preemptive jurisdiction over the transmission and wholesale of electricity in interstate commerce. 16 U.S.C. 824(b)(1) (1994).

^{180.} See New England Power Pool, 67 F.E.R.C. ¶ 61,042 (1994); Consolidated Edison Co. of New York, 15 F.E.R.C. ¶ 61,174 (1984).

4, and 5 cent bidders) but it would pay each of them either 5 cents or 6 cents/ kWh. Obviously at least two and perhaps all three of the bidders would be paid more than they were willing to accept for their power. This clearly will raise the utilities' cost of purchasing generation and thus the prices they charge their customers.¹⁸⁶

(5) POOLCO Discourages Long Term Investment

The problem is that the market clearing price is likely to be the short run marginal cost of the generating units. However, this price will not include a charge for capacity. Under this assumption about the pool price, Direct Access proponents argue that "it is highly unlikely that any new capacity would be constructed on the basis of pool prices or of CFDs which merely reflect future expectations of pool prices."¹⁸⁷

c. Bidding Issues

An important collateral issue related to the functioning of the pool is how to determine the market clearing price. In California, there has been discussion of at least three auction mechanisms as well as the appropriateness of using *ex ante* versus *ex post* prices.

(1) First or Second Price Auction or As-Bid?

In a "First Price" or "Dutch" auction, the price is set according to the bid by the last generator selected by the pool during any given period. In contrast, in a "Second Price" auction, the price is set according to the lowest losing bid. The obvious advantage of the First Price auction is that, between the two methods, it affords consumers the lowest price between the two. However, such an auction introduces unwanted incentives for bidders to engage in strategic bidding because the winner's bid affects the price that is paid. The Second Price auction avoids this problem.

A third alternative offered by a number of consumer groups is the "As-Bid" or "Average Bid" approach.¹⁸⁸ In this approach, the pool pays out whatever a winning bidder bids rather then a single market clearing price. For example, suppose Generators A, B, and C bid 10 megawatts each at three, four, and five cents a kilowatt hour, respectively, while a fourth Generator D bids six cents/kWh. If the demand is only 30 megawatts, a First Price auction would pay five cents/kWh to low bidders A, B, and C. However, in an As-Bid world, Generator A would get three cents/kWh, Generator B would get four cents, and Generator C would get five cents.

^{186.} California Large Energy Consumers Ass'n, supra note 69, at 10-11.

^{187.} California Manufacturers Ass'n, supra note 163, at 22.

^{188.} See generally Association of California Water Agencies (ACWA), Opening Comments on the Electric Industry Restructuring Proposals (submitted to the CPUC) (on file with the Energy Law Journal).

From an equity point of view, consumers are clearly better off since they would pay an average price of four, rather than five, cents. This type of approach also clearly addresses the "inframarginal rent" problem raised by POOLCO opponents and discussed above.

However, from an efficiency point of view, this As-Bid approach would likely also mean that the consumer would not face true marginal cost pricing signals so that, at least in a competitive generation market, this mechanism might introduce an allocative inefficiency into the market.¹⁸⁹

(3) Ex Ante or Ex Post Prices?

Besides the method of auction, there has also been discussion about whether or not the pool should use *ex ante* or *ex post* prices. The advantage of *ex ante* pricing is that it provides certainty to the buyer. The advantage of *ex post* pricing is that it can be used to "sweep up" or reconcile the difference between the generation and load that was expected *ex ante* and what actually occurred *ex post*.

4. POOLCO with Contracts for Differences (CFDs)

The POOLCO with CFD model is a hybrid designed to address some of the efficiency arguments against the pure POOLCO model by providing, if not the direct access of the bilateral model, then "virtual direct access."¹⁹⁰ This model, which has been embraced by the CPUC, draws on the experience of the British with just such a system. With this model, buyers sell to the pool and sellers receive power from the pool as with POOLCO. However, buyers and sellers are also allowed to engage in bilateral negotiations and enter into "contract for differences."

Suppose, then, that a buyer and seller sign a contract for differences that binds the seller to provide power at four cents/kWh. If the pool price is five cents/kwh, then the generator gets five cents from the pool and rebates one cent to the buyer. If, on the other hand, the pool price is three cents/kWh, then the generator gets three cents from the pool and another penny from the buyer.

a. Pros and Cons

The obvious benefit of this "virtual direct access" is that it promotes greater competition in the marketplace in a similar fashion as the real Direct Access model does. However, it does so without giving rise to the technical problems associated with the contract path model. As the California Energy Commission has put it:

^{189.} If the market turns out to be monopolistic, the As-Bid approach would actually *reduce* allocative inefficiency because it would lead to a price that is lower and an output that is higher than the monopoly outcome.

^{190.} Direct access involves the actual physical dispatch and transmission of electricity for a contracted price. "Virtual direct access" involves only financial contracts between the end user and the supplier without the requirement for physical dispatch and transmission.

With these more-or-less real-time spot prices now made transparent to consumers, every retail customer will be free to negotiate bilateral contracts with any generation supplier they choose at whatever prices, terms and conditions the buyers and sellers agree to.¹⁹¹

However, the equally obvious equity problem is that POOLCO with CFDs will be prone to much the same kinds of negotiating asymmetries that plague the Direct Access model and which were discussed above. In particular, smaller customers will have less practical access to the fruits of competition because of more inelastic demands and imperfect information while large customers will capture the lion's share of the restructuring benefits. As the American Association for Retired People has put it:

The "contracts for differences" may prove to be effective instruments for reducing electricity prices, but may not be viable for individual residential consumers due to the costs involved in negotiating and maintaining such contracts.¹⁹²

Within this context, it is useful to note that there has not been widespread use of CFDs in the United Kingdom, where the POOLCO with CFDs model originated: "Electric users have not utilized CFDs; these instruments have been utilized almost exclusively between independent power producers and regional electricity companies."¹⁹³

b. The function of CFDs

A final issue involving POOLCO with CFDs relates to the real function of the CFDs. To some, these CFDs are simply a short to medium run (less than five years) instrument to hedge risk. In this case, the CFDs do little to encourage capacity expansion because they would not hedge seller risk associated with building new power plants with long construction lead times and longer service lives. From this point of view, CFDs are very different from futures contracts regularly traded on various stock exchanges:

Futures contracts are standardized contracts that can be traded in a liquid market. The only true differentiation which occurs in futures contracts is price; quantity and term are stated in standardized units... In order to be of value to the users, CFDs would need to be tailored to meet the individual load profile of the user. Individually negotiated CFDs may not be sufficiently standardized to allow for the creation of a liquid market.¹⁹⁴

On the other hand, it may be argued that these CFDs do, in fact, offer longer run arrangements that will facilitate capacity expansion. As William Hogan has put it, "generation contracts between customers and producers

^{191.} California Energy Comm'n, supra note 53, at 9-10 (Boldface in original).

^{192.} American Ass'n. of Retired Persons, Comments of the California State Legislative Committee on Electric Services Restructuring, (June 24, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

^{193.} California Energy Comm'n, Comments of the Energy Producers and Users Coalition, (July 24, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

^{194.} Id. at 14.

can insure producer cash flow and provide the required support for financing new projects.¹⁹⁵

Which view is the correct one is an important one for the restructuring regulator to decide because it bears on the broader issue of system reliability over the longer term.

5. PoolPlus

A fourth model has been proposed that combines the virtues of POOLCO and the Bilateral Model without the drawback of ratepayer inequities.¹⁹⁶ This model basically assigns an additional function to the power pool ISO. Rather than simply post "vanilla" spot market prices for hourly or daily power, PoolPlus will post a menu of short, medium, and long run transparent prices arrived in a bidding process.

In particular, PoolPlus will take bids for medium and longer term prices on both a firm and an interruptible basis in lieu of negotiations between buyers and sellers. Thus, rather than allowing negotiated prices to be confidential, as is the case with both the Direct Access and POOLCO with CFDs models, PoolPlus will force full transparency of all prices—short and long term. By doing so, PoolPlus will function not only as a spot market but as a quasi-forward market as well.

Under PoolPlus, if the electricity generation market is truly competitive, PoolPlus will yield posted prices that reflect lowest possible costs.

VI. RESTRUCTURING THE ELECTRICITY DISTRIBUTION MARKET

The third major feature of restructuring the electricity industry involves a complete revamping of the distribution sector. Two key questions for the restructuring regulator are: (1) Should performance-based ratemaking (PBR) be substituted for traditional rate base regulation (RBR), and (2) What type of organizational structure will provide small residential customers with both meaningful choice in the electricity market and sufficient bargaining power to exercise that choice?

The first question—PBR vs. RBR—is a critical one because PBR is rapidly gaining favor as the "reform du jour" among both state and federal regulators. As we shall see, however, PBR is neither good nor bad but design and implementation make it so, and a badly designed PBR—such as recently adopted by the California PUC—can exacerbate rather than alleviate chronic regulatory problems.

Resolving the second question—appropriate distribution market structure—is absolutely critical if the restructuring regulator is to head off a potentially ugly civil war between different classes of ratepayers: principally, large industrial users versus small residential and business users. The

^{195.} Hogan, supra note 138, at 26.

^{196.} Peter Navarro, *PoolPlus: A Way Out of the Direct Access vs. Poolco Dilemma*, Graduate School of Management Working Paper, University of California-Irvine (August 1995).

problem here is the marked asymmetry between the bargaining power and access to information of these two very different classes of customers. Put simply, smaller customers—so-called "kilocustomers"¹⁹⁷—are at a much bigger disadvantage in the emerging electricity market.

In addressing this second question, some have argued that the overarching goal of the restructuring regulator should be to insure that the benefits of competition in the generation market flow through to all consumers. However, in meeting this goal, the restructuring regulator faces important tradeoffs between economic competitiveness and equity.

For example, if the primary goal of restructuring is to improve the economic competitiveness of industries within the regulator's jurisdiction—as has been stated repeatedly in the California reform effort—then the market should be structured to allow industrial (and to a certain extent commercial) users to capture a disproportionate share of the savings from competition in the generation market. However, this will occur at the expense of small residential and commercial customers. In the worst case scenario, rates for smaller customers might actually rise—as they have in both the United Kingdom and Norway in a restructured environment.

A. Performance-Based Ratemaking^{198,199}

As with electricity transmission, there is universal agreement among the partisans in the restructuring debate that electricity distribution is a natural monopoly characterized by significant economies of scale and scope and therefore needs to be regulated. There is an almost equally universal agreement that traditional RBR is a deeply flawed mechanism in urgent need of reform. At present, one of the leading candidates to take the place of RBR is PBR.

At present, PBR is being implemented, or considered by, public utility commissions in over 20 states.²⁰⁰ By the year 2000, PBR may well reach most of the 50 states²⁰¹ as well as the FERC.²⁰²

At the forefront of this PBR revolution is California. It has not only recommended PBR for regulating the electricity distribution market, it has already approved PBR for one major utility, San Diego Gas & Electric

^{197.} Small customers buy kilowatt hours (hence "kilocustomers") whereas larger customers deal in megawatts.

^{198.} For an in-depth analysis of PBR, see Peter Navarro, *The Simple Analytics of Performance-based Ratemaking*, YALE J. ON REG. (forthcoming Winter 1996).

^{199.} This discussion focuses on the application of Performance-based Ratemaking to the setting of base rates. Other applications include fuel procurement, pollution control, and demand side management.

^{200.} See generally Craig S. Cano, Former Regulators Look to "Brave New World" in Electric Business, INSIDE FERC Nov. 21, 1994, at 6. See also Peter Navarro, The ABCs of PBR, 133 PUB. UTILS. FORT., at 16-21.

^{201.} For an overview of the status of PBR in the gas distribution industry, see G. A. Commes, *Review of Performance-based Ratemaking Plans for U.S. Gas Distribution Companies*, Lawrence Berkeley Laboratory, University of California, Discussion Paper (November, 1994).

^{202.} For a summary of FERC's latest activities, see FOSTER NAT. GAS REP., Feb. 9, 1995, at 1.

(SDG&E), and is in the midst of proceedings for Southern California Edison and Pacific Gas & Electric.

As has been written about extensively elsewhere and will be discussed further below, the California experiment with PBR, at least to date, has been a dismal failure.²⁰³ Rather than reduce electricity rates to enhance the competitiveness of California businesses, PBR has simply enriched SDG&E shareholders at the expense of ratepayers.²⁰⁴

To understand why PBR has failed in California and why it may not be the panacea restructuring proponents portray it as, it is important to understand the basic premise of PBR and the three paradoxes inherent in this premise. It is also essential to understand the fundamental mechanics of PBR.

1. The PBR Premise

The PBR premise is that under traditional cost-plus RBR, utility managers will not only fail to minimize costs but also strategically attempt to conceal their firm's true minimum cost curve. The reason may be traced to a set of "perverse incentives" that encourages managers to inflate the firm's operation and maintenance expenses, "goldplate" or over-invest in capital, avoid optimal risk taking and otherwise operate inefficiently. In attempting to solve this "cost minimization-cost revelation" problem, PBR presents the regulator with three basic paradoxes that must be resolved in order for PBR to succeed.

The first paradox is that the restructuring regulator seeks to encourage the utility to operate at minimum cost. However, because of asymmetric information and strategic gaming by the utility, the regulator does not know what the firm's true cost structure is.²⁰⁵

The second paradox is that the best incentive to insure that the utility pursues maximum cost savings is to simply give all the savings to the utility. However, distributing all of the realized savings would defeat a major goal of the PBR experiment which is to reduce electricity rates and thereby enhance economic competitiveness.²⁰⁶ Hence, some type of sharing mech-

^{203.} See Navarro supra note 196; Navarro, supra note 198.

^{204.} According to the first report filed by SDG&E in the wake of adopting PBR, the utility distributed roughly \$32 million in cost savings to ratepayers and another \$7 million in bonuses related to other PBR indices. Ratepayers actually wound up paying higher rates. See Shames, supra note 156, at 33-36.

^{205.} In at least one sense, this paradox argues in favor of incentive ratemaking because PBR gives the firm the impetus to lower its costs as much as possible whereas RBR requires regulators to know the firm's costs. The issue, however, is whether utility managers will actually pursue such cost-savings or continue to bloat the cost structure because of undue risk aversion or "expense preference" behavior, i.e., use the firm's funds to increase staff and other perquisites. This problem is discussed at length in Navarro, *supra* note 198, within the context of the "agency theory" problem that arises generally from the separation of ownership and control in the modern corporation and specifically in regulated industries.

^{206.} The second major PBR goal is "fairness." As a political necessity, utility savings may well have to be shared with ratepayers.

anism has to be designed that retains the incentives for the utilities to reduce costs but also distributes some of these savings so as to lower rates.

The third paradox is that any effective PBR system requires a quality control mechanism to prevent utilities from cutting quality to achieve false "cost savings." However, such a mechanism is difficult to implement and entails significant transactions costs. This is because while changes in quality are easily measured, they are difficult to value given their "non-marketed" good characteristics.

That is, marketed goods like hamburgers and shoes are easy to value because they are regularly sold in the marketplace at posted prices. The value is simply price times quantity. It is much more difficult to value non-marketed goods such as clean air, uncongested freeways, and safe neighborhoods because, by definition, there are few, if any, markets where these amenities are bought and sold at posted prices.²⁰⁷

In the electricity industry, quality parameters such as employee safety, system reliability and customer satisfaction exhibit characteristics of these non-marketed goods. They are not readily traded in the market place and therefore difficult to value. This, in turn, raises a thorny analytical problem when the regulator wants to levy a penalty for a reduction in quality.

2. PBR Mechanics

PBR involves these three basic steps: (1) Set a starting point or "baseline" revenue requirement to begin the experiment and allow for adjustments for inflation, productivity, and other factors over time, (2) Provide utility managers with a package of incentives to encourage these managers to produce at a cost below this baseline, and (3) Include a "quality control" mechanism to insure that the utility does not pursue cost savings at the expense of system reliability, safety, customer satisfaction, and other measures of quality.

In taking these three steps, the restructuring regulator faces several major potential pitfalls. First, if the baseline revenue requirement is set too high the result will be bogus accounting cost savings rather than real savings. Second, the sharing mechanism must encourage the utility to pursue the maximum achievable cost-effective cost savings—not simply allow the utility to reap the lion's share of the most easily achieved cost savings and then stop. Third, there must be a reasonable linkage between the penalty for quality deterioration and the reward system established by the sharing mechanism.

^{207.} Some markets do exist for goods with non-marketed characteristics. For example, federal environmental laws have helped create a market in "pollution credits," toll roads help measure the willingness of people to pay for congestion, and electricity rates that are differentiated by firm and interruptible contracts put a value on reliability. Nonetheless, none of these devices provide as clear a valuation for non-marketed goods as price data does for marketed goods.

a. Setting the Baseline

In setting the baseline revenue requirement, the regulator faces the same problems of gamesmanship, incomplete information and cost revelation as it does under RBR. Specifically, the utility will attempt to establish an initial baseline as high as possible, build in as generous an escalation factor as feasible, and keep any offsets such as "productivity factors" as low as possible. Ratepayer advocates will have a tendency to do just the opposite: understate the baseline, minimize escalation, and boost the productivity factor. In coping with this strategic gaming problem, the restructuring regulator can either use the same methodology it has historically used in the RBR process to set the baseline or it can employ a newly emerging "statistical benchmark model" approach.

(1) The Traditional Method

The baseline is set exactly the same way the revenue requirement is set in an RBR proceeding: the utility provides estimates of its cost of capital and operating costs, proposes indices to adjust for inflation and adjustments for productivity to offset inflation, and provides a forecast demand which may be divided into the revenue requirement to calculate price.

In reviewing all this material, regulators will be vulnerable to exactly the same gaming that RBR always has been, and the regulatory outcome will be determined by a complex political calculus involving the relative strengths of the competing interests involved, the ideological orientation of the regulatory commissioners and bureaucrats, and the degree of incomplete information.

The good news for PBR is that there is nothing *a priori* to suggest that the baseline will be set at any more of a bloated level under PBR than it is now set under a regular RBR proceeding. However, it should be equally clear that if care is not taken in the initial setting of the baseline, PBR will not fulfill its cost cutting promises but merely be a reformist cloak for bogus accounting profits rather than meaningful rate reductions.

(2) Statistical Benchmarking

In the traditional RBR proceeding, the basic unit of measure is the firm itself or, perhaps, a small cluster of firms operating within the regulatory jurisdiction. In contrast, the Statistical Benchmark Modeling approach typically examines the price and cost structure of a wider sample of utilities.²⁰⁸ It then normalizes this data by adjusting for geography, weather, fuel mix, and other operating conditions and characteristics. It is

^{208.} See Economic Sciences Corp., Performance Evaluation: California Investor-owned Utilities, Statistical Results, Consumer Alliance for Electric Rate Reductions (May, 1994).

the application of this normalized data to a specific firm that can potentially better reveal a firm's true minimum cost curve.²⁰⁹

It follows that a well-executed Statistical Benchmark Modeling procedure can be used in a PBR proceeding both as a independent check on the traditional, firm-specific method of determining the baseline revenue requirement as well as a guidepost to the target ending point of the PBR experiment.²¹⁰

b. The Sharing Mechanism

The object of PBR is not only to stimulate cost savings but also to insure that as much of those savings as possible flow through to ratepayers. This is not just for the sake of equity but also to improve the competitiveness of the economy by lowering the price of a key manufacturing input. The important policy question, then, is: what type of sharing mechanism best achieves this goal?

In practice, the choice is between a "progressive sharing mechanism" in which case utility shareholders receive an increasing share of each increment of cost savings versus a "regressive sharing mechanism" in which the share of utility savings falls as cost savings increase.

As has been demonstrated elsewhere, a progressive sharing mechanism almost always will be preferred to a regressive one.²¹¹ This is because, in a world of increasing costs, each increment of additional cost savings will cost the utility more to achieve. Unless the utility's share of the savings rises with the level of cost savings, the danger is that it will be uneconomical for that utility to pursue additional cost savings.

c. The Quality Control Mechanism

The function of the quality control mechanism is to establish a clear linkage between any utility cost savings achieved under PBR incentives and the maintenance of various measures of utility performance.

The potential problem faced by the restructuring regulator should be obvious: the utility may be tempted to achieve false cost savings by deferring necessary maintenance, reducing service personnel, or engaging in some other type of cost cutting that reduces some measure of performance.

^{209.} Id. In its benchmarking analysis of three California utilities, Economic Sciences Corporation used a model that included the operating statistics of the top 100 utilities in the country. The model incorporated statistical normalization for customer characteristics, power source, fuel cost and plant characteristics, labor costs, taxes, and productivity.

^{210.} To date, utilities have responded in an extremely negative manner to the use of Statistical Benchmark Modeling and in at least one case, with what appeared to be some good reason. See, e.g., Southern California Edison, Southern California Edison Company's Evaluation and Response to the CAERR Study, Testimony before the Public Utilities Commission of the State of California regarding Application No. 93-12-029 (Sept., 1994) (submitted to the CPUC) (on file with the Energy Law Journal).

^{211.} See Navarro supra note 198.

The equally obvious solution to this problem is to devise a system that penalizes utilities in such a way as to directly link the sharing of cost savings to the maintenance of quality standards.

In designing this third component of the PBR system, the regulator must: (1) determine what measures of quality to include in the system; (2) set thresholds or floors for each of the quality parameters; and (3) establish a system of penalties for violations of the quality constraints.

(1) Determining Quality Parameters

The relevant quality parameters should include, but not be limited to, system reliability, customer service, and employee safety. Each of these parameters are regularly measured by utilities and therefore easy to monitor.

(2) Setting Quality Thresholds

Establishing thresholds for each of the quality parameters is an important regulatory function with significant political implications. In this regard, the restructuring regulator may be tempted to simply peg quality at its existing level; but these levels may not be optimal.

For example, under RBR the utility may have padded its service force, leading to excessive service. Alternatively, it may have over-built its generation system beyond a reasonable reliability standard. However, if the restructuring regulator volitionally cuts levels of target quality, he or she runs the risk of political criticism when customer satisfaction falls or system interruptions increase.

As to where the thresholds should be set, this poses a significant analytical problem because while kilowatts of electricity or cubic feet of gas are assigned dollar values in the market place, other non-price dimensions of performance such as service and safety are not.

(3) Assessing Penalties

In theory, the optimal penalty system is straightforward: The profit maximizing utility will cut costs at the expense of quality up to the point where the marginal gains from cutting costs are equal to the marginal losses from the penalties of reducing quality. Recognizing this calculus, the restructuring regulator must devise a system of penalties that insures that the marginal penalty from reducing quality below the quality floor is always greater than the utility's marginal benefit.

This, of course, is easier said than done: In order to implement such a system, one must first assign dollar values to changes in the various quality parameters. The problem, however, is that non-price performance indicators such as customer service and employee safety share the same charac-

teristics as non-marketed public goods. They are difficult to value precisely because they are not assigned any explicit prices in the market place.²¹²

It is possible to estimate a valuation schedule for changes in quality using, for example, methodologies such as contingent valuation or hedonic pricing.²¹³ From such data, penalties can be calculated to reflect sound marginal cost pricing economics, i.e., the penalty or "price" of violating the quality constraint should be set above the utility's marginal cost of violating it. However, in practice, such studies are expensive to conduct and may conflict with one of the other goals of PBR which is to reduce regulatory and administrative costs.

(a) Some Rules of Thumb

The easiest and toughest valuation rule would be to deny the utility its share of cost savings should any quality parameter be breached. Under such a rule, the quality threshold is inviolable. The danger here is that such a rule would discourage risk taking on the part of utility managers and likely lead to a non-optimal "quality cushion" well above the quality threshold.

A second, more flexible approach is to assess the penalty as some fraction of the cost savings that increases as quality falls. If one accepts the intuitive notion that the marginal cost to the ratepayer of lowered quality is rising, then it follows that the "penalty fraction" should rise as quality falls further below the quality floor.

Regardless of the method used to assess penalties, the most important rule to adhere to is that the magnitude of the penalty should be commensurate with the magnitude of the cost savings. Put another way, do not impose small penalties for big violations and vice versa.

3. California Scheming: PBR in Practice

In October of 1992, San Diego Gas & Electric (SDG&E) filed an application with the CPUC to convert from a traditional RBR proceeding to a PBR type regulatory framework.²¹⁴ In filing its application, SDG&E cited the need to "reduce the significant burden and regulatory inefficiency that arise from traditional regulatory oversight."²¹⁵ SDG&E was subsequently joined by the CPUC's Division of Ratepayer Advocates (DRA) and the Federal Executive Agencies (FEA) in submitting a Joint Proposal

^{212.} See Richard T. Carson & Robert C. Mitchell, Using Surveys to Value Public Goods: The Contingent Valuation (1989).

^{213.} See id. for an analysis of the various methods.

^{214.} San Diego Gas & Electric, Application of San Diego Gas & Electric to Establish an Experimental Performance-based Ratemaking Mechanism Before the Public Utilities Commission of the State of California, Application No. 92-10-017 (Oct., 1992) (submitted to the CPUC) (on file with the Energy Law Journal).

^{215.} Id. at 5.

on December 7, 1993²¹⁶ while the Utility Consumers Action Network (UCAN) submitted testimony in opposition to the Joint Proposal.²¹⁷

At evidentiary hearings during the week of January 24 to January 28, 1994, briefs were filed by these four parties as well as the California Department of General Services, the California Energy Commission, the City of San Diego, and the Natural Resources Defense Council.

In its application, SDG&E requested a PBR mechanism contrary to the basic principles of sound PBR ratemaking: SDG&E proposed a revenue requirement baseline and adjustments to that baseline according to its own firm-specific, econometric data rather than relative to any statistical benchmarking. SDG&E argued for a regressive sharing mechanism that featured 100% of savings to shareholders for the first 100 basis points above the company's authorized rate of return (ROR), 75% of savings between 100 and 150 basis points, and 50% above 150 basis points.²¹⁸ SDG&E proposed quality control parameters of employee safety, customer satisfaction, and system reliability but also advocated a fourth criterion involving a comparison of SDG&E's rates to a national rate index which had no direct linkage to SDG&E's performance.²¹⁹ Finally, SDG&E proposed a penalty schedule that offered penalties too small relative to the reductions in quality.

On August 3, 1994, the CPUC issued a decision that essentially endorsed, *in toto*, SDG&E's application, including its preferred baseline, a regressive sharing mechanism, and the national rate index comparison. In doing so, the CPUC adopted a precedent-setting PBR framework in the nation's most populous state that appears to violate each of the basic principles of good PBR regulation.

SDG&E subsequently has filed its first PBR report.²²⁰ The results seem to bear out this assessment. This report revealed that, under PBR, SDG&E achieved savings equal to \$55.4 million more than its authorized PBR rate of return (before taxes). After taxes, shareholders received \$32 million compared to roughly one million for ratepayers. In addition, SDG&E shareholders received another \$7 million in rewards related to the quality control mechanisms. However, ratepayers received nothing.²²¹ At the same time, a report issued by the CPUC's Division of Ratepayer Advocates indicates that during the first year of PBR, SDG&E's rates rose by 3.85% compared to an increase in the national rate of only 0.42%, sug-

^{216.} Prepared Direct Joint Testimony on Performance-Based Ratemaking Base Rate Mechanism for San Diego Gas & Electric Company (U 902-M) of San Diego Gas & Electric, Division of Ratepayer Advocates, Department of the Navy, and All Other Federal Executive Agencies, (December 7, 1993) (submitted to the CPUC) (on file with the Energy Law Journal).

^{217.} See William B. Marcus, UCAN'S Evaluation of SDG&E's Performance-based Ratemaking Base Rate Mechanism (Dec. 7, 1993) (submitted to the CPUC) (on file with the Energy Law Journal). 218. San Diego Gas & Electric, supra note 214, at 15.

^{219.} That is, SDG&E's rates relative to that index would be determined much more by exogenous events such as fuel price shocks rather than by SDG&E's strategic behavior.

^{220.} San Diego Gas & Electric, PBR Base Rate Mechanism Final Performance Report - 1994 (May 15, 1995) (on file with the Energy Law Journal).

^{221.} Id.

gesting that California is falling further behind, not catching up, on the global competitive front.²²²

In light of this performance, it is doubtful that replacing RBR with PBR, at least in California, is a wise move.

B. Market Structure: Regulated Monopoly versus Retail Wheeling

In the traditional electricity distribution market structure, customers typically buy electricity from a regulated monopoly distribution company that is part of a vertically integrated investor owned utility (IOU). Rates for the regulated distribution monopoly are set through traditional rate base procedures, with price typically set equal to average cost. The obvious question for the restructuring regulator is whether the regulated distribution monopoly should continue to reign supreme in a restructuring environment or whether the alternative model of "retail wheeling" should be introduced. Only under retail wheeling can the full Direct Access model be implemented.

1. Retail Wheeling

In the retail wheeling model, the regulated monopolist's distribution grid becomes "public property" or a "common carrier" in much the same way that the transmission grid does under the wholesale wheeling of bulk power. In this case, other players are given open access to the monopolist's distribution network for a reasonable charge so that these players can sell directly to customers. In this model, the regulated monopoly may or may not be allowed to compete; if it does not, its role is reduced to that of simply common carrier.

In the retail wheeling model, players in the distribution market can contract directly with the customer and use the local regulated monopolist's network to "wheel" power directly to the customer. With such retail wheeling, the distribution market is opened up to a wide variety of participants, including energy service companies, brokers and marketers, municipalities and other government entities, retailers, generators, non-profit groups, consumer groups, and even possibly the power pool itself.²²³ (This market structure is somewhat similar to that of the telecommunications industry in which MCI, SPRINT, and hundreds of other players are now allowed to compete directly with AT&T for long distance customers and

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^{222.} California Public Utilities Comm'n, Division of Ratepayer Advocates, 1994 Monitoring Report of San Diego Gas & Electric Company Performance-based Ratemaking (PBR) for Base-Rates, at 9 (July 28, 1995) (on file with the Energy Law Journal).

^{223.} A collateral issue has to do with how services should be billed. For example, under retail wheeling, the regulated distribution monopoly may or may not retain the billing responsibility. Suppose, then, that a residential customer chooses an Energy Service Company (ESC) instead of its local distribution monopoly to provide the power. The ESC could bill the customer directly for its power usage while the distribution monopoly could bill the ESC for a network access charge. Alternatively, the distribution monopoly could bill the customer directly both for an access and power charge and rebate the power charge to the ESC. While there is little difference in these billing procedures, the broader question here is what is the nature of the bill and the menu of choices being offered to the customer?

use the distribution grid of the local "Baby Bell" distribution companies to access customers.)²²⁴

While a number of other aspects of restructuring promise jurisdictional problems between the states and the FERC, retail wheeling does not appear to be one of them. According to the California Manufacturers Association:

The FERC also has made clear that it views the matter of retail access to be within the purview of state commissions and that it stands ready to accommodate retail competition both through the approval of retail *transmission* tariffs and by delineating between federally-regulated transmission and state-regulated distribution facilities.²²⁵

The question for the restructuring regulator is whether such an open market structure will lead to lower rates and better service. If the experience of the telecommunications industry is any indicator, a word of caution must be sounded.

To date, the long distance market has been dominated by a three firm oligopoly—AT&T, Sprint, and MCI—that has used advertising to aggressively compete for market share but has also been able to wield market power over customers for the usual reasons of brand loyalty and an inelastic demand. Small customers, in particular, have been confused by the advertising and have found it difficult to make choices.²²⁶ One practical result is that most of these customers subscribe to AT&T, MCI, or Sprint, despite the fact that there are numerous other companies that charge significantly lower rates.²²⁷

226. There is a wealth of survey information to substantiate this claim. For example, CDB Research and Consulting, Inc. released a study in April of 1995 showing that 78% of the 1,019 respondents to the survey were tired of the advertising and "hype" about long distance services, 59% said they were confused about available calling plans, and 60% believed that all of the major long distance providers charge the same rates. Long-Distance Ads: Americans Hang Up On Long Distance Ads; 78% Sick of Hype—Nearly 60% Confused by Plans, 10 EDGE 350, April 10, 1995. Similarly, in another survey released by Sprint in January of 1995, only 38% of the respondents were aware of the per-minute price they pay for long-distance service, compared to 88% who know the cost of car fuel and 86% who know the cost of a loaf of bread. Sprint Unveils Long Distance Uncertainty, TELECOMMWORLDWIRE, January 10, 1995.

227. One could argue that the deregulation glass in telecommunication is half full because rates have gone down significantly. The "half empty" view, however, is that because this market is dominated by a three firm oligopoly, much of the potential benefits in reduced rates are dissipated by the heavy advertising expenditures of the oligopolists.

^{224.} The analogy here is this: consider electricity as a long distance call which has to pass through the local distribution net to be completed.

^{225.} See Promoting Wholesale Competition Through Open Access Non-Discriminating Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, IV F.E.R.C. STATS & REGS ¶ 32,514, at 33,133 (1995). See also California Manufacturers Ass'n, supra note 163, at 9. This point is echoed in Electric Clearinghouse, Inc, supra note 178, at 5 (July 24, 1995): "The fact that the EPAct prohibited the FERC from mandating retail wheeling simply meant that it was left up to individual states to decide the retail wheeling issue."

2. The Importance of Metering

"Given metering costs and the way markets function, the availability of the benefits of competition to residential customers will be difficult to achieve \dots "²²⁸

An important side issue in the retail wheeling debate involves the issue of metering. Put simply, many of the choices potentially available to consumers are, in reality, contingent upon the installation of simple real time meters and some choices are contingent upon the installation of more expensive "smart meters."

For example, customers will be unable to fully optimize on hourly prices in the spot market unless they have meters that yield both price and level of usage. Similarly, smart meters can be useful in shutting off appliances in interruptible service situations, e.g., during a spiked peak in demand.

While large customers already have, or can be easily metered, the installation of meters into the kilocustomer's home is a massive job with a potentially hefty price tag. Sharon Haynes-Creswell has estimated that "installing competition meters in all residential homes. . .will cost \$7.05 billion per year [while] the annual residential revenues of California utilities are \$6.2 billion."²²⁹

In contrast, Cellnet Data Systems, a metering company, points to their ongoing experiment with Kansas City Power and Light (KCPL) in which the company is already deploying almost half a million meters with realtime capability.

By using an integrated approach that combines advanced metering with data communications and management, KCPL is able to implement this technology at a net *savings* to its ratepayers. The total cost to KCPL is more than offset by improved efficiency or elimination of existing processes, including manual meter reading, estimated bill processing, revenue protection, meter accuracy, and others.²³⁰

Given the importance of meters, the various questions the restructuring regulator must address are: Should meters be mandatory, who should pay for their installation, and what types of meters should be installed?²³¹ More broadly, the restructuring regulator must also ask whether the costs of installing meters are worth the benefits. This is by no means assured if the gains from choice are small:

[T]he ability of real time pricing . . . to shift significant loads to lower-cost periods is questionable. The two largest household appliances are refrigera-

231. The situation is complicated by the rapid obsolescence of meter technology and no accepted standard meter in the industry.

^{228.} Sharon Haynes-Creswell, California/Nevada Community Action Ass'n, Executive Director, at 5 (July 24, 1995) (submitted to the CPUC) (on file with the *Energy Law Journal*).

^{229.} Id. at 21.

^{230.} California Energy Comm'n, Comments of Cellnet Data Systems (July 25, 1995) (submitted to the CPUC) (on file with the Energy Law Journal). This point is reinforced in Comments of Pacific Gas and Electric Company, supra note 59: "[S]uch 'smart metering' can be justified through benefits to the customer brought on by savings to the utility in meter reading and maintenance."

tors and heating/air conditioning units. As a practical matter, it is unlikely that consumers are going to unplug their refrigerators for certain peak hours or go without heating or air conditioning when it is needed. Although consumers may be willing to shift other discretionary uses to some extent, it is highly unlikely that such discretionary load shifting will be of sufficient magnitude to save the consumer much money.²³²

C. What is "Meaningful" Consumer Choice?

"It is a world of confusing and unattractive choices with little prospect for meaningful rate reduction for a majority of consumers."²³³

In the rhetoric of restructuring, proponents frequently tout expanded consumer choice as a major benefit. The real question is: What does expanded choice mean and, more importantly, will such choice really be meaningful? A collateral question is this: Will the expanded choice set be so complex and the flow of information so limited that the consumers will be unable or unwilling to exercise choice?

The most obvious expanded choice in a retail wheeling framework is the opportunity to choose an energy provider—one's original distribution company, a generating company, a broker, etc. But such a choice is meaningless unless the menu that these providers offer presents the consumer with real options. Perhaps the best way to understand the expanded choice set is by way of example.

Suppose, then, in a retail wheeling environment, a representative from one of the above list of providers presents Customers A, B, and C with a menu of choices. These choices might include:²³⁴ Total expected usage (quantity), pattern of usage (peak versus off-peak), total usage at any one time (capacity), the level of voltage fluctuation that can be tolerated (power quality), firm or interruptible service (reliability), desire for a levelized payment plan (budget stability), choice of power source (e.g., "green" energy such as windmills), and so on.²³⁵

In such an environment, Customer A might choose a high quantity of electricity, heavy consumption during peak hours, a tall or "spiked" capacity peak, minimal voltage fluctuation, firm service, a levelized payment plan, and all green energy. In contrast, Customer B, seeking to achieve maximum cost savings, might choose a completely opposite plan while Customer C—the so-called "sideliner"—might wish not to be bothered at all and just take "vanilla" service.

The question for the restructuring regulator is which type of consumer will be the norm—because if it is, on average, sideliner Customer C, then

^{232.} California Manufacturers Ass'n, supra note 163, at 20.

^{233.} Shames, supra note 160.

^{234.} This list is hardly exhaustive.

^{235.} It must be noted that many of these choices could be incorporated into the current regulatory framework simply by allowing the regulated distribution monopoly to offer them. Massive restructuring isn't necessary to provide consumers with choices such as peak and off-peak and firm and interruptible service. In fact, some programs now do. However, the very absence of such programs suggests that consumers may not be all that interested.

the choice is not meaningful. The collateral question is why might Customer C choose not to participate.

1. The Sideliners

"The underside to choice is confusion."²³⁶

One reason Customer C might not participate is that he does not have enough information or the degree of sophistication to make an informed choice.²³⁷ In this case, programs to better educate the consumer will mitigate this problem. However, it must be noted that choosing from a menu of electricity services will be much more complex than, say, choosing a phone plan, and the evidence suggests that this is already too confusing.

A second reason is that Customer C might make the rational economic decision that the potential benefits of exercising choice are simply not worth the costs in time and information gathering. In some sense, this is the dilemma of the kilocustomer: at the individual level, savings are small relative to costs. It is a dilemma that can be resolved through aggregation,²³⁸ but, as discussed below, this dims the light of expanded choice.

Still a third problem that arises for all types of customers is this: If energy providers compete not on information but rather on propaganda, the result will be similar to that now experienced in the long distance phone market: consumer apathy in the short run and exploitation of the consumer by a few oligopoly providers in the longer run. As the CPUC's Division of Ratepayer Advocates points out:

The telecommunications industry... shows that despite hundreds of millions of dollars spent on advertising, customers appear to be more confused than enlightened by the rate claims made by long-distance providers. Rate structures are complicated, and do not readily allow for comparison. Consequently, a competitive market in electricity may be subject to similar pitfalls.²³⁹

2. Proposed Solutions

To overcome the problems of imperfect information and economic disincentives to participate, some consumer advocates have proposed various kinds of *information*, *oversight*, *and consumer protection* programs to resolve these problems.

For example, in California, the Utility Consumers' Action Network (UCAN) has proposed the creation of a "California Energy Education

^{236.} Haynes-Creswell, supra note 228, at 25.

^{237.} To see this, pretend that you are offered the same choice set as Customers A, B, and C. Would you have enough information to make an informed choice? Or would you even want to take the time to educate yourself?

^{238.} A second approach could involve reducing the costs of information to consumers so that they can make better choices. This approach might emerge from a free market, e.g., magazines like "Electricity Consumer Reports" might be published. A more heavy-hand regulatory approach might involve the creation of electronic bulletin boards and/or required disclosure forms in marketing literature.

^{239.} Division of Ratepayer Advocates, supra note 108, at 16.

Trust" to provide education to the small consumer about the implementation of restructured services. UCAN also supports the creation of an Internet-accessible bulletin board service where kilocustomers can learn about "real-time electricity transactions."240

To address the issue of propaganda in advertising and provide regulatory oversight, UCAN has also proposed regulations akin to Truth-In-Lending laws to assure that "all providers of electric service afford customers the ability to comparison shop for electric service."241

UCAN also favors protection for so-called "sideliners" like Customer C in the example above in the form of regulations to insure that these sidelines "should not be required to pay higher rates than they would have absent such restructuring."242 In support of these reforms and in recognition of the problems associated with imperfect information in the marketplace, UCAN argues that: "Underlying this principle is the recognition that those sideliners are likely to be customers who, for a number of reasons, do not have the capacity to understand the available options or whose electric needs are too small for them to reap meaningful savings."243

Countervailing Bargaining Power for the Kilocustomer D_{\cdot}

As part of a restructuring order, the Commission must accept that it has the ultimate responsibility of facilitating the aggregation of kilocustomers to discharge its responsibility of providing meaningful choice to all customer classes.²⁴⁴

As discussed above, large utility customers are likely to fare better in the restructured environment than kilocustomers unless the restructuring regulator builds additional features into the reform to address the three sources of relative market power enjoyed by large consumers. These three sources include: a more elastic demand, better access to information in a market characterized by imperfect information, and lower transaction costs because such costs can be spread over a larger base of fixed costs.

While we have discussed a number of measures related to improving the quality of information in the market, another strategy available to the restructuring regulator is to facilitate the aggregation of smaller consumers into an effective bargaining unit.

1. Aggregation Strategies

In the most fundamental sense, [aggregation] strives to achieve the synergy of organizing the end users of a product, commodity, or service in a way that gives the group greater buying power than any of its members individually.²⁴⁵

^{240.} Shames, supra note 156, at 11.

^{241.} Shames, supra note 156, at 11.

^{242.} Shames, *supra* note 156, at 11.243. Shames, *supra* note 156, at 11.

^{244.} Shames, supra note 156, at 15.

^{245.} California Energy Comm'n, Comments of School Project for Utility Rate Reduction (SPURR) and Regional Energy Management Coalition (REMAC) On the Proposed Policy Decisions (July 24, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

Under an aggregation strategy, electricity is sold to a buyer that might represent a combination of meters. This is a strategy that regulators in California used when natural gas was deregulated under a "Core Aggregation Program." This program facilitates the aggregation of small customers with similar load characteristics to buy natural gas. However, it is important to note that, at least in the natural gas case, some critics believe this program to date has been a dismal failure:

[R]etail choice for residential [gas] customers is still an illusion. Even with a specific "core aggregation" program intended to allow those customers to be more easily served by non-utility sources, the competitive market for residential customers never emerged. Well under ten percent of the core market load statewide has opted to participate in the core aggregation program, and most of that load is commercial or institutional in nature.²⁴⁶

Within the context of electricity, the simplest aggregation strategy is to retain the original regulated monopoly distribution company as the sole electricity distributor. However, this strategy conflicts with the goal of providing customers with the choice of their provider and fostering competition in the retail wheeling market.

On the other hand, retaining the monopoly distribution company as the consumer's *de facto* aggregator, coupled with the protection of rate regulation, will prevent small customers from being exploited by the market power of oligopoly players in the retail wheeling market.

An alternative model has been offered in the California debate by the consumer advocacy group TURN (Towards Utility Rate Normalization). The TURN proposal would provide exclusive access to the monopoly distribution company's network by consumer-owned co-ops.

New legislation should be enacted which would specifically authorize cities and other governmental entities which already have the power to grant retail electric franchises to establish, in addition, a consumer-owned utility (COU)... the COU would purchase distribution and other services from the local IOU at CPUC-regulated rates and function primarily to aggregate the loads of all the residents and businesses within the jurisdiction. Wholesale suppliers... would compete to supply all or a portion of the COU's electric demand.²⁴⁷

Regardless of which aggregation strategy that a regulator might pursue, one thing should at least be clear: in the absence of aggregation, the small kilocustomer will be at a large bargaining disadvantage relative to large customers.

VII. "PUBLIC RESPONSIBILITY PROGRAMS"

As part of their regulatory structure and for a wide variety of reasons, virtually all PUCs have mandated so-called "public responsibility pro-

^{246.} Toward Utility Rate Normalization, supra note 164, at 38.

^{247.} Toward Utility Rate Normalization, What Small Consumers Want from Electric Industry Restructuring and/or Regulatory Reform (May 9, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

grams" that impose on IOUs requirements that go far beyond simply delivering reliable electricity at lowest costs.

Some programs such as "lifeline" and "baseline" rate structures are tools of income redistribution implemented on equity grounds. Other programs such as "demand side management" and "integrated resource planning" have been implemented in the name of economic efficiency to internalize so-called "externalities"²⁴⁸ related to environmental pollution and oil import dependence. Still other economic development programs and subsidies to research and development have been implemented to create jobs over the short or longer one.

While each of these programs are characterized by different motives, they do share one common characteristic: ALL of these programs will be at risk during restructuring precisely because they run counter to the tenets of a free market environment. Accordingly, it is useful to at least briefly discuss how restructuring might affect each of these kinds of programs and what types of policy instruments the restructuring regulator might employ to preserve them in some fashion. In this regard, the California experiment will be instructive.

A. Ratepayer Assistance Programs

Ratepayer assistance programs fall into two basic categories: those designed to help low income ratepayers, and those designed to assist a broader segment of ratepayers while promoting energy conservation.

1. Low Income Ratepayer Assistance Programs

These type of programs come in many guises. Some provide qualifying low income individuals with full or partial subsidies for their electricity service. Some finance weatherization programs to help low income families cut their electricity bills through increased conservation. Some establish "lifeline" rates to provide the poor with a minimum level of service.

Typically, these programs are financed by a cross-subsidy derived from the revenue stream provided by other classes of customers. For example, in California the CARE program (California Alternative Rates for Energy) provides a 15% discount for low income customers and is financed by all other customer classes.²⁴⁹

2. Energy Conservation and "Baseline Rates"

In some states, so-called "baseline rates" have been established both to protect ratepayers as a class from high rates and also to promote energy conservation.

For example, in California the PUC must establish a baseline level of electricity consumption priced at a reasonable cost. The purpose of the program is to "supply a significant portion of the reasonable energy needs

^{248.} A discussion of externalities may be found in any textbook on microeconomics.

^{249. 161} Pub. Util. Rep. 4th (PUR) at 255.

of the average residential customer" at an affordable price.²⁵⁰ Consumption above the baseline is priced at a higher rate, providing an incentive to conserve electricity.

Such programs are likewise funded through cross-subsidies, in this case, both across customer classes and within the residential class.

3. Economic Development Programs

Some states have implemented various economic development programs that, in effect, provide some geographic or demographic areas of the state (or specialized functions such as military bases) with rates which are lower than other areas and subsidized by other consumers.

4. Policy Options

Ratepayer assistance programs, particularly for the poor and elderly on fixed incomes, are an important part of the political landscape in most regulatory jurisdictions. Hence, there will generally be great resistance to eliminating them.

As a practical matter, such programs will be far easier to maintain under a POOLCO type structure than in a Direct Access environment.²⁵¹ As the California PUC has noted within the context of lifeline programs, "Under a pool model, the Commission can continue to require the utility to provide this discount; collection of the costs for these programs from all customer classes would be similar to today."²⁵²

In contrast, with a Direct Access structure with retail choice, the regulated monopoly will no longer be the sole provider of utility services, and it will be necessary to create more complex regulations to require all suppliers to provide such rates. As Knight has noted within the context of lifeline rates, "large residential consumers, largely subsidizing the lower baseline tier through their consumption, [will] leave the utility system for lower rates from other suppliers."^{253,254}

One possible solution proposed by Knight which is consistent with a Direct Access Model is to shift the responsibility of collecting the ratepayer subsidy to the seller in the market, i.e., the generator. These subsidies could then be transferred to "an organization similar to the Universal Life-line Trust Fund that is currently used for telephone service"²⁵⁵ and then distributed to beneficiaries.

With regard to job creation programs, these likewise can be accommodated in a pooling framework through surcharges but are inconsistent with a Direct Access model. In a Direct Access model, such programs will likely

^{250. 161} Pub. Util. Rep. 4th (PUR) at 255.

^{251.} This is perhaps one reason why business interests oppose the pool.

^{252. 161} Pub. Util. Rep. 4th (PUR) at 255.

^{253. 161} Pub. Util. Rep. 4th (PUR) at 385.

^{254.} A similar problem arises with low-income weatherization programs which are now typically implemented by the regulated distribution monopoly.

^{255. 161} Pub. Util. Rep. 4th (PUR) at 385.

only exist if other sources of funding outside the electricity industry are identified, i.e., general revenue funding.

B. Environmental, National Security, and other "Externalities"

Regulatory commissions in numerous states have adopted a wide range of programs aimed at "internalizing" various economic "externalities" associated with electricity production and consumption. In economics, an "externality" is defined as a cost imposed on society through the production or consumption of a good that is not fully borne by the producer or the consumer. For example, in the case of a "negative pollution externality," an electricity producer might use a coal power plant to generate electricity. In the course of production, the producer bears the cost of the fuel, labor, capital, and other expenses associated with the generation. However, in a free market, the producer does not have to bear the cost of the air pollution that such electricity might engender.²⁵⁶

Because the free market fails to properly account for such "externalities," the market experiences a "market failure" in which too much of the good is produced or consumed at too low a price. Government intervention is the typical economist's prescription.

1. Demand Side Management

Demand side management programs are designed to both reduce energy consumption (the "conservation" motive) and to reconfigure the pattern of consumption in order to reduce peak load requirements.

Proponents of DSM programs argue that by conserving energy, such programs help reduce environmental externalities associated with the operation of conventional central station power plants. Such conservation also helps internalize a "national security externality" associated with heavy oil import dependence. That is, as oil import dependence grows, our economy grows more vulnerable to supply interruptions and the monopoly pricing of the oil cartel. This, in turn, puts upward pressure on defense spending and increases the risk of war. Because such costs and risks are not reflected in the price of oil, an externality associated with oil consumption is posited to exist.²⁵⁷

By "shaving" peak load, DSM programs also provide another kind of external benefit to all ratepayers and the broader economy because they reduce the need for new power plants.

2. Integrated Resource Planning, Energy Efficiency, and Renewables

Similar environmental, national security, and financial capital arguments have been put forward to support the use of Integrated Resource

^{256.} Costs might include property damage from particulate, increased respiratory disease, loss of visibility, and increased acid rain.

^{257.} It is this argument which forms the basis of support for an oil import tax that has been embraced by the European community but historically rebuffed in America.

Planning (IRP) and related energy efficiency and renewable energy programs. Such programs are designed to promote a diversity of the generation mix to simultaneously internalize all three types of externalities.

The debate over the fate of IRP in a restructuring framework is turning out to be a major battleground in the California experiment. On the one hand, large industrial consumers, several of the largest utilities, and even the CPUC's Division of Ratepayer Advocates²⁵⁸ are arguing that the new emerging market will achieve the same goals as IRP in a more costeffective fashion. This view is best expressed by this passage from Knight's Minority Opinion that incorporates the views of Southern California Edison:

Edison "applauds" the Commission's recognition that, in a restructured, competitive environment, no place exists for a complicated system of governmentsponsored central planning for the procurement of new generation resources... "The market will determine when resources are needed, and which resources are selected," in Edison's opinion and, thus, there is no need to subject utilities to regulatory process such as the Biennial Resource Plan Update proceeding [an IRP proceeding].²⁵⁹

On the other hand, supporters of IRP, particularly environment groups, argue that IRP will fall by the wayside in a deregulated frame. This view is reflected in Knight's assessment of one such group:

The Natural Resources Defense Council (NRDC) offers a harsh criticism of the proposal's reliance on a "let the market decide" policy for new investment in electric generation services. In NRDC's view, such a policy 'overlooks decades of evidence' that a reliance on market forces fails to minimize the full costs to society of electric services.²⁶⁰

To stimulate the expansion of renewable generation capacity, the Environmental Defense Fund has proposed an "Auction Production Credit." The restructuring regulator would set funding levels for renewables and raise the funds with a surcharge on all grid-connected customers. Renewable projects would then bid in periodic auctions the per-kilowatt hour value of the credit they need to compete in the market. The low bidders — those who need the least subsidies — win and therefore the system would yield the most efficient producers.²⁶¹

3. Some Statistical Evidence

While proponents of Direct Access assert that a free market will achieve the goals of DSM and IRP, available statistical evidence to date strongly suggests otherwise. Perhaps the best evidence of how programs

^{258. &}quot;Potential environmental benefits from fuel diversity will also be internalized in the decision making of competitors to the extent that they will incur costs to comply with the environmental regulations imposed by various local, state, and federal agencies." *Division of Ratepayer Advocates, supra* note 108, at 28.

^{259. 161} Pub. Util. Rep. 4th (PUR) at 389.

^{260. 161} Pub. Util. Rep. 4th (PUR) at 389.

^{261.} California Energy Comm'n, Comments of Environmental Defense Fund on the Commission's Proposed Policy Decision (July 24, 1995) (submitted to the CPUC) (on file with the Energy Law Journal).

such as DSM and IRP are inconsistent with the Direct Access model is provided by experiences in two of the three countries in the world that have undergone restructuring, Norway and the United Kingdom.

In 1990, the Norwegian parliament passed an Energy Act that has radically changed the market structure of its electricity industry.²⁶² Today, only the transmission grid remains under regulatory control while a Direct Access model has been implemented.

Interestingly, as part of the Norwegian Energy Act, the original legislation required utilities to "adopt and practice the basic principles of integrated resource planning in order to promote energy efficiency" as well as DSM.²⁶³ However, by 1994, the Norwegian government "officially removed the IRP requirements established by the Energy Act and weakened the requirements pertaining to DSM."²⁶⁴ According to Dan York, the Direct Access model "has created a market situation in which customers have little incentive to invest in DSM"²⁶⁵ and even less incentive to diversify the fuel mix.

A similar problem has emerged in the U.K. where, with the implementation of the "virtual direct access" POOLCO with CFDs model, there has been a "dash-for-gas." That is, virtually all new capacity is natural gas fired, and this "dash" has put at risk IRP programs to balance the generation mix with coal and other energy sources.²⁶⁶ In response to this problem, U.K. legislators have adopted a variety of supplementary programs, including a "Non-Fossil Fuel Obligation" tax to help subsidize nuclear power and renewable resources and an Energy Savings Trust to help reduce environmental externalities.²⁶⁷

4. Policy Options

In thinking about the various policy options open to the restructuring regulator, it is useful to reflect on the California experience.

Recognizing the value of IRP-type programs, the Majority Proposal has suggested that the legislature establish "targets" for renewable energy, require either purchasers from the pool or suppliers of electricity to meet the targets, and enforce the targets through a market-based "tradable permits program" similar to that used with "pollution credits" to meet the requirements of the Clean Air Act.²⁶⁸

At the same time, the Majority Proposal wants to retain energy efficiency programs. However, in a proposal that may not fully appreciate the political difficulty that is implied, the CPUC seeks to shift the burden of funding such programs away from electricity rates and onto the backs of

^{262.} See Dan York, Competitive Electricity Markets in Practice: Experience in Norway, 7 ELEC. J., June 1994, at 49.

^{263.} Id. at 49.

^{264.} Id. at 53.

^{265.} Id.

^{266.} Woolf, supra note 48, at 60-61

^{267.} Woolf, supra note 48, at 63.

^{268. 161} Pub. Util. Rep. 4th (PUR) at 258.

taxpayers either directly via general fund outlays or indirectly through a system of tax credits. Funds raised through this process would be dispersed much like income assistance programs, i.e., through a state agency or trust fund.²⁶⁹ (Other policy instruments to achieve include the use of "green pricing" in the market, i.e., charging a premium price for renewable energy.)

C. The Line Item Debate

A collateral issue related to financing the above so-called "public responsibility programs" is whether or not to list charges for such programs in separate line items on customer bills. In considering whether or not to "unbundle" the cost of such programs, the restructuring regulator should be mindful of the economic argument in favor of unbundling as well as the possible underlying political agenda.

On the economic front, the efficiency argument is simply this: the listings are consistent with free market principles which require consumers to be given as much information as possible. In this view, such listings will improve the efficiency of the market.

On the political front, utilities and large electricity users bear much of the burden of public responsibility programs—particularly income redistribution programs. They have been joined by conservatives in supporting the line item. This coalition believes that by unbundling the costs to ratepayers, political support for such programs will falter.

In response to these arguments, some have argued not against bundling *per se* but rather for "non-discriminatory" bundling. For example, in his comments on restructuring, Michael Shames has argued that if DSM and IRP charges are to be included in bills, such bills also ought to unbundle charges for items such as nuclear decommissioning costs and the costs of stranded investments and liabilities such as those related to nuclear power and QF contracts.²⁷⁰

Similarly, Sharon Haynes-Creswell has argued: "The proposal to isolate the various public obligations of the electric system in separate line items on bills will have the effect of setting these activities up as scapegoats for any cost complaints of the public."²⁷¹

VIII. SUMMARY AND CONCLUSIONS

This article has examined the major economic, legal, and political issues swirling around the increasingly intense debate over restructuring of the nation's electric utility industry. The overarching goal of this article has been to provide both a guidebook and research agenda for the restructuring regulator, as well as legislators, policymakers, and various stakeholders in the outcome of this debate.

The "Big Three" questions of the restructuring debate are: Should electricity generation be deregulated? How can fair and open access to the

^{269.} Pub. Util. Rep. 4th (PUR) at 258-259.

^{270.} Shames, supra note 156, at 32.

^{271.} Haynes-Creswell, supra note 228, at 5.

transmission grid be assured? Should performance-based regulation or "PBR" replace traditional rate base regulation in the distribution sector?

With regard to the major generation market issues, the restructuring regulator must answer these fundamental questions: Is the market for electricity generation either competitive or potentially competitive? Should the generation sector be de-integrated from transmission and distribution? If so, should utilities be forced to divest or spin-off their assets?

The important collateral issue in the event electricity generation is deregulated is this: How should stranded costs and liabilities be treated? Should full or partial recovery be allowed? If so, what is the appropriate mechanism to recover stranded costs? It is precisely these questions that pose the most thorny political problems for the restructuring regulator.

With regard to the major transmission market issues, the biggest question is which model—Direct Access, POOLCO, POOLCO with CFDs, or PoolPlus—is the most appropriate? Perhaps the most important collateral question that must be answered by the restructuring regulator is whether the warnings of POOLCO proponents about the technical infeasibility of the Direct Access model are true. If they are not, much of the argument for POOLCO disappears.

With regard to distribution market issues, it should be clear that performance-based regulation is unlikely to be the panacea that its proponents have painted it. The overarching PBR question is whether such a system can be designed and implemented so that it actually outperforms traditional rate base regulation.

The other major distribution market issue revolves around how consumer choice can be made meaningful, particularly for small consumers. Absent meaningful choice, small consumers are unlikely to prosper in a restructuring environment, and that, in turn, is a prescription for political turmoil.

Finally, the restructuring regulator faces major choices regarding the fate of various public responsibility programs ranging from low income assistance to demand side management and integrated resource planning. Here, there are numerous unanswered questions about whether such programs can survive in a restructuring world and whether it is even desirable to retain them.

Because there are numerous questions that remain unanswered in the restructuring debate, at least one thing is clear: There is insufficient information for the restructuring regulator to make all the necessary choices with any high degree of certainty as to what the eventual outcome will be. While the hope in many quarters is significantly reduced electricity costs and a more competitive U.S. economy, there remains a significant probability that restructuring will merely result in a monopolistic industry prone to price gouging and inefficiencies.

Much work remains to be done. In the spirit of "look before you leap," perhaps this article will help advance the debate another small step forward.