UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Remedying Undue Discrimination
through Open Access Transmission Service
and Standard Electricity Market Design **Docket No. RM01-12-000**

INITIAL COMMENTS OF

THE CONSUMER FEDERATION OF AMERICA

AND CONSUMERS UNION

November 14, 2002

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EXECUTIVE SUMMARY

Based upon extensive analysis of efforts to create electricity markets in the United States and abroad and a review of the record in several recent Federal Energy Regulatory Commission (FERC) proceedings, the Consumer Federation of America and Consumers Union conclude that the Standard Electricity Market Design (SMD) proposal is not in the public interest. Forcing all regions of the country to rely on single price auctions in spot markets and basing transmission services on a pricing principle that charges "whatever the market will bear" with no relationship to actual costs will not result in just and reasonable rates or promote efficient service.

In **Section II** we show that the economic fundamentals of electricity are severe and make for very weak market forces. The Federal Power Act and its interpretation by the courts over sixty years recognize that electricity is a special service.

Monopoly rents from the abuse of market power are a pervasive problem. Low elasticity of demand and supply are now recognized as the most critical factor in rendering the market volatile and vulnerable to abuse. When demand is inelastic, consumers are vulnerable to price increases, since they cannot cut back or find substitutes for their use of the commodity. When supply cannot respond quickly to price, producers gain a strong interest in withholding supplies to increase prices.

Excessive scarcity rents are a pervasive problem in electricity markets. The inelasticity of supply and demand gives rise to a second deviation from a typical competitive market; excessive rents. Excessive scarcity rents accrue where changes in supply are slow or nonexistent. Because supply cannot respond to price signals, the owners of existing facilities just collect windfall profits. The high rates of return that result from scarcity rents are unjust and unreasonable, just as are excessive returns resulting from abuse of market power.

The experience with restructured electricity markets demonstrates that the unique and severe economic characteristics still dominate electricity service. Supply dislocations, market manipulations, transmission bottlenecks and non-market factors (like weather and drought) opened the door to market manipulations and dislocations, which result in huge price increases. Under these circumstances abandonment of cost-based ratemaking creates numerous and substantial opportunities to demand unjust and unreasonable rates.

In **Section III** we present the legal and policy context in which the SMD exists.

The nature and extent of discrimination in the interstate market does not justify the radical change proposed by the FERC. The FERC has failed to demonstrate that the problem the SMD claims to solve, undue discrimination in access to transmission services, merits the radical restructuring and deregulation it proposes. The cure is far worse than the disease. There has been no showing by the FERC that undue discrimination is the cause of a significant number of unjust and unreasonable rates or substantial inefficiencies in interstate transactions. Indeed, the FERC's own efforts to estimate the benefits of the elimination of

undue discrimination through the formation of the Regional Transmission Organizations found remarkably little "efficiency" gains to be had.

The FERC's evidentiary record on undue discrimination is thoroughly corrupted. The FERC relies on a few formal complaints, in which findings of undue discrimination were never made, and informal hotline calls, statements and public conferences complaints from companies who proved to be far from trustworthy. Subsequent facts have shown that they have engaged in fraudulent and abusive behaviors, some of which would directly undermine their claims of discrimination. Moreover, many of the practices FERC cites as unduly discriminatory may, in fact, be efficient actions taken by entities possessing economies of scale or exhibiting economies of vertical integration.

The Federal Power Act is quite clear and explicit that every rate or charge for transmission or electricity subject to FERC jurisdiction must be just and reasonable. Under the Federal Power Act reliance on markets and market forces is a means to an end, not an end in itself. The radical change and extreme reliance on spot markets that FERC has proposed goes well beyond the Supreme Court's interpretation of reliance on markets to ensure just and reasonable rates.

Under the SMD, the FERC has no assurances, whatsoever, that the rate demanded (bids offered) for any of the six electricity products it requires will bear any relationship to the cost of production. Moreover, under the single price auction, which is the only type of market it will allow, the price paid for all but the last unit offered is likely to exceed the cost of production. It takes a heroic set of assumptions, which have rarely, if ever, been observed in the electricity industry, to claim that this scheme will produce prices that are just and reasonable even on average.

In the pricing of transmission services, the FERC does not even pretend to be attempting to establish charges that bear any relationship to costs. Here it explicitly adopts a value-based approach that intends to charge whatever the market will bear. The FERC's approach to the provision of transmission services also contradicts its obligation to promote efficient operation of the interstate transmission network because its obsession with the deintegration of transmission and generation destroys any economies of vertical integration.

In **Section IV** we present a critique of the details of the SMD and propose an alternative that allows the FERC to deal with any problems of undue discrimination without undermining the basis for just and reasonable rates in interstate jurisdiction.

Structural Conditions for Competition Must be Created First: It is a widely accepted principle of economic practice that structural remedies are vastly superior to conduct or behavioral remedies. Under the severe conditions that obtain in electricity markets, it is clear that both are needed, but the fundamental principle is even more important. No amount of market design, which is essentially a behavioral matter, can compensate for a lack of actual competition. FERC has failed to address the structural problems in the electricity market. The structural criteria by which the FERC proposes to deregulate markets will not ensure that rates are just and reasonable.

Given the recent experiences in electricity markets, the FERC must design its structural test of competitiveness taking into account not only the unilateral actions of dominant firms (pivotal suppliers), but also potentially collusive actions and non-collusive games of multiple market players. It must not deregulate markets unless the number of competitors is so large and the redundant capacity available sufficient to make even non-collusive games unprofitable for market participants. FERC should limit grants of authority to price at market until these conditions are met. But FERC has not determined how investors would build redundant capacity.

The reserve margin requirement proposed by the FERC is far too low to create a bulwark against the abuse of market power. The 12 percent figure chosen by the FERC is barely at the level of operating reserves traditionally used in vertically integrated, non-market situations. It does not create an economic reserve, which is necessary to prevent the abuse of market power. The FERC cannot abdicate its responsibility to ensure that rates are just and reasonable by stating that state authorities can adopt higher reserve margin requirements. The FERC must demonstrate on the basis of its own action within its jurisdiction that rates are just and reasonable.

The SMD has failed to deal with the problem of vertical integration between the gas market and the electricity market. It has now become apparent that natural gas prices in the West were manipulated by market participants who were active in both the electricity and natural gas markets and this poses an entirely new threat to just and reasonable rates in the electricity market.

A much less radical approach to independent transmission organizations can control undue discrimination without exposing consumers to the risk of spot markets and auctions. There is no evidentiary basis for concluding that truly independent transmission organizations could not operate the grid in a non-discriminatory manner that would not expose the public to the risks and volatility of the spot market FERC would impose. The new transmission organization can accomplish the fundamental goals of promoting efficient operation of the grid while preventing undue discrimination at just and reasonable rates by applying existing principles in a rigorous fashion:

- Least cost planning for grid expansion by conducting a competitive bidding process
- Implement engineering driven, least cost dispatch for grid operation
- Tariffs should be distance sensitive and based on actual cost
- All users of the grid should pay for their use out of one network access service

Both monopoly and excessive scarcity rents must be controlled. To the extent that the FERC relies on markets it must adopt decision rules and benchmarks for market operation and market monitoring that yield just and reasonable rates.

Excessive scarcity rents must not be allowed. Because of the strong likelihood that the severe market fundamentals will create excessive scarcity rents, the FERC must adopt decision rules that seek to squeeze those rents out. In establishing benchmarks, the FERC should choose the lowest possible price, which is what a competitive market would do.

When an electron is bid into multiple markets – either product or geographic markets – the FERC should ensure that the electron sells at the lowest possible price. The lowest of bid prices would be the closest to the marginal cost at which the seller is willing to make the electron available. That is the theory underlying the FERC's single price auction; that must be the practice. The FERC's failure to apply the lowest price rule means, by definition, rates will not be just and reasonable under the SMD.

In a single price auction, bids must be at marginal costs and the FERC has no justification to allow adders or provide "make whole" procedures for sellers. The SMD is riddled with these biases in favor of sellers and against buyers. The fact that the FERC is considering including in its marginal cost benchmark costs other than the rigorously defined real marginal cost of production is another deviation from the theory underlying the SMD. Any additional costs included in the benchmark will guarantee rates that are not just and reasonable.

Market power mitigation must be much more aggressive. FERC must also ensure that market monitoring detects all situations with the potential for the abuse of market power and mitigation measures effectively addresses these threats to just and reasonable rates.

All hours: The FERC cannot look only at peak hours in monitoring for the abuse of market power. Withholding and strategic bidding have occurred and driven up prices during hours where demand was far from the peak in numerous markets.

All products: The FERC cannot focus only on selective products in spot markets in its monitoring for the abuse of market power. Unjust and unreasonable prices have been demanded and (because of imperfect market conditions) paid in bilateral contracts. If structural conditions are not adequate to ensure competitive outcomes, all products must be monitored.

All markets: The FERC cannot assume that it can rely on competitive spot markets to ensure competitive bilateral markets. The fact that the FERC recognizes it needs a reserve requirement attests to the inability of short term markets to elicit long term supply. Indeed, existing interstate transmission organizations recognize they need long-term markets and that they have been plagued by market power problems.

All significant suppliers: The thrust of the past quarter century of economic analysis and the empirical evidence in electricity markets shows that unilateral actions by a dominant market participant are not the only sources of abuse of market power. Collusive and non-collusive behaviors by groups of large market participants can cause rates to be unjust and unreasonable, especially where interactions in the market are repeated.

I. THE SMD LACKS AN EVIDENTIARY, LEGAL AND EMPIRICAL BASIS AND IS NOT IN THE PUBLIC INTEREST

A. IDENTITY AND INTEREST OF COMMENTERS

The Consumer Federation of America (CFA) and Consumers Union (CU) respectfully submit these initial comments in response to the Notice of Proposed Rulemaking (NOPR) "Remedying Undue Discrimination through Open Access Transmission Service and Standard Electricity Market Design" (SMD), issued by the Federal Energy Regulatory Commission (FERC).[1]

For over two decades, CFA has played a leading role in advocating on behalf of residential consumers in the electricity restructuring debate at the federal level, while our member organizations have been active in restructuring across the United States. Indeed, CFA was a litigant in the first case dealing with the creation of the Western Systems Power Pool.[2] At that time we expressed concerns about the premature deregulation of markets that presaged the problems the Western market faces today. Experience over the past decade has proven that those concerns were well founded.

As recently as January 2000, pointing to our analysis of the failure of restructured electricity markets to perform well, CFA cautioned the FERC that it was moving down a path leading to disaster for residential electricity consumers.[3] Throughout 2000 CFA participated in every one of the Regional Transmission Organization Workshops conducted by the FERC

[1] Docket No. RM01-12-000, July 31, 2002.
[2] *Environmental Action and the Consumer Federation of America v. FERC*, 996, F. 2d 401, 410 (D.C. Cir. 1993). Attachment A documents the two decades of involvement of the Consumer Federation of America in federal policymaking in the matters examined in these comments.
[3] "Consumer Federation Of America, Request For Reconsideration Regional Transmission Organizations," *Federal Energy Regulatory Commission*, Docket No. RM99-2-000; Order No. 2000, January 20, 2000, at 2...5.

and continued to present analysis of the electricity market. In May 2001, CFA intervened in the complaint of San Diego Gas & Electric Company. [4]

In June 2001, CU petitioned the FERC to suspend market-based rate authority for power providers in the Western States in response to large price spikes that were occurring throughout the western electricity market that we believed were caused by the manipulative behavior of energy traders.[5] Electricity prices in the western market had increased some ten to twenty times the price of the previous year. Our petition, which was joined by Southern California Edison and the California Electricity Oversight Board – and opposed by energy marketing firms such as Dynegy and Mirant – also sought refunds of unreasonable power costs.

While the FERC ultimately held that its orders imposing a price cap and a "must offer" requirement made the CU complaint moot, recent evidence has confirmed that energy traders were in fact engaging in market manipulation in the western electricity market in 2000 and 2001. Legal action has been brought against trading firms, and guilty pleas have been elicited. More recently, the Williams Companies agreed to pay more than $400 million to settle accusations that it manipulated electricity prices in California.[6] In addition, the General Accounting Office[7] and a Senate committee[8] have criticized the FERC for its handling of the

[4] Motion To Intervene And Request For Rehearing Of The Consumer Federation Of America, Arizona Consumers Council, CALPIRG, Colorado PIRG, Consumer Action, Consumer Federation Of California, Consumer Fraud Watch, Democratic Process Center, Illinois PIRG, Mass PIRG, Massachusetts Consumers' Coalition, Michigan Consumer Federation, New York PIRG Pennsylvania Citizens Consumer Council, Utility Consumers' Action Network, Virginia Citizens Consumer Council, *San Diego Gas and Electric Company v. Sellers of Energy and Ancillary Services into Markets Operated by the California Independent System Operator and the California Power Exchange*, 95 FERC (2001)

[5] Docket No. EL01-90-000, June 15, 2001.

[6] Barboza, David, "A Big Victory By California In Energy Case: Williams Cos. To Settle Clamis of Overcharges," *The New York Times*, November 12, 2002.

[7] "Energy Markets: Concerted Actions Needed by FERC to Confront Challenges That Impede Effective Oversight," *The General Accounting Office* (GAO-02-656), June 2002.

western electricity crisis, primarily due to its failure to properly oversee the activities of energy traders leading to manipulative practices by those traders.

B. CONCLUSIONS AND RECOMMENDATIONS

Based upon extensive analysis of efforts to create electricity markets in the United States and abroad and a review of the record in several recent the FERC proceedings, the Consumer Federation of America and Consumers Union conclude that the FERC proposal to force all regions of the country to rely on single price auctions in spot markets for energy and transmission services for interstate electricity transactions is not in the public interest and will not result in just and reasonable rates.[9] Electricity markets around the country are in turmoil and consumers' electricity service is becoming more costly and more risky. Rather than bring

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[8] Iwata, Edward, "Panel: FERC dropped ball on Enron: Senate report portrays agency as toothless lapdog," *USA Today*, November 12, 2002.

[9] In addition to the above cited filings and the testimony identified in Attachment A, the Consumer Federation of America, its staff and member organizations have published numerous analyses of electricity markets including the following. Cooper, Mark, *Industrial Organization and Market Performance in the Transportation and Communications Industries: A Review of Current Theories and Empirical Applications to the Railroad, Electric Utility, Airline, Telecommunications and Oil Pipeline Industries with Hypotheses about Natural Gas Pipelines* (January 1986) (hereafter, Cooper, *Organization*), identified basic economic conditions in the electricity industry that raise doubts about the prospects for deregulation as the debate was beginning (see also Cooper, Mark, "Theory vs. Reality," *Consumer Federation of America Utilities Conference*, April 6, 1987). Cooper, Mark, "Protecting the Public Interest in the Transition to Competition in New York Industries," The Electric Utility Industry in Transition (Public Utilities Reports, Inc. & the New York State Energy Research and Development Authority, 1994), restated these concerns as the policy of restructuring was being formulated. Cooper, Mark, *Residential Consumer Economics of Electric Utility Restructuring* (Consumer Federation of America and Consumers Union, July 1998) (hereafter, Cooper, *Economics)*, identified specific flaws in the restructuring policies that had been adopted. Cooper, Mark, *Electricity Restructuring and the Price Spikes of 1998* (Consumer Federation of America and Consumers Union, June 1999) (hereafter, Cooper, *Spike*), *Reconsidering Electricity Restructuring* (Consumer Federation and Consumers Union, November 2000) (hereafter, Cooper, *Reconsidering), Back To Basics In Analyzing The Failure Of Electricity Restructuring: Accepting The Limits Of Markets*, Energy Markets in Turmoil, Institute for Regulatory Policy Studies Illinois State University, May 17, 200, discussed the obvious problems that emerged in the initial phases of implementation of restructuring. These concerns have been expressed in presentations to state policymaker including, the Arizona Public Service Commission, April 17, 2000), the Wisconsin Public Power Association (June 28, 2000); Nevada Energy Policy Committee, November 30, 2000, Florida Public Utility Commission (January 13, 2001) and the Consumer Affairs Committee of the National Association of Regulatory Utility Commissioners (February 25, 2001). Cooper, Mark, *Electricity Deregulation And Consumers: Lessons From A Hot Spring And A Cool Summer* (Consumer Federation of America, August 30, 2001, "The Public Interest and U.S. Capitalism" in *Electricity: Too Important to Leave to the Marke: Collected Papers* (September 2002), examine electricity restructuring in

stability to markets, this proposal will introduce more costs and more risks for consumers. Electricity markets have failed more often than not, not because of poor market design, but because of failure to recognize the economic fundamentals. As we show in these comments, the proposed SMD largely ignores those fundamentals.

These comments demonstrate that the FERC has not established an evidentiary basis for concluding that the interstate electricity jurisdiction is afflicted by a significant problem of undue discrimination. The problem demonstrated in the record is insufficient to justify the FERC's proposal to radically alter the nation's energy markets. The comments go on to show even if the FERC has the general authority to implement a Standard Market Design, the specific rules it has a chosen violate its other obligations under the Federal Power Act. That is, in pursuit of the elimination of undue discrimination, it has violated the principle that service should be efficient and rates should be just and reasonable.

There are alternative mechanisms to deal with undue discrimination that are well within its authority and would not violate the other objectives of the statute, most importantly, FERC's duty to ensure that the public is provided efficient service at just and reasonable rates.

C. OUTLINE OF THE COMMENTS

The comments are divided into three parts following this introduction.

In Section II we discuss the empirical reality of electricity service. In order to promote the public interest and ensure that rates are just and reasonable, public policy must be based on a clear understanding of the severe and difficult economic conditions that obtain in the electricity sector.

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light of the severe problems in the West and the subsequent revelations of market manipulation and fraud in the merchant generators.

In Section III we present the legal and policy context in which the SMD exists. The Federal Power Act as interpreted by the courts requires public policy to be oriented to the practical outcome of efficient provision of electricity service at just and reasonable rates. Markets are a means to this end, not an end in themselves. Theoretical market outcomes do not satisfy the Federal Power Act; reliance on market forces is allowed only if the goals of the Act are furthered in reality. In this section, we show that the FERC has not met the legal burden under the Act to justify the radical change in public policy it proposes.

In Section IV, we show numerous ways in which the failure of the SMD to deal with the reality of electricity service will result in unjust and unreasonable rates to consumers. This section includes a complete rewrite of the market power monitoring proposal. Here we propose an alternative approach to the problem of undue discrimination that is consistent with the magnitude of the problem that actually exists and the authority and objectives granted to the FERC under the Federal Power Act.

II. THE UNIQUE CHARACTERISTICS OF ELECTRICITY

The Federal Power Act and its interpretation by the Courts are premised on a number of fundamental assumptions about the nature of electricity service. The continuing commitment to the concept of just and reasonable rates that are based upon the cost of service reflects the recognition that electricity is a special service. Its economic fundamentals are severe and make for very weak market forces. Its physics are demanding, so that many decisions are dictated by engineering and demand coordination and cooperation, which is better supplied in centralized, integrated institutions. There are no close substitutes for electricity. The implementation of public policy to achieve the goals of the Federal Power

Act must be based upon a careful understanding of this empirical reality. Unfortunately, the FERC's SMD is not.

In order to make a market, there must be a competitive supply side, demand side options and an open and adequate highway of commerce in between. In electricity, we have none of the above (see Exhibit 1). The SMD does not provide the missing elements. The market cannot be relied upon to be competitive and it will not produce just and reasonable rates under current circumstances.

A. DEMAND

Electricity is a necessity that has no substitute on the demand side in the short-term.[10] Denial of access to this service results in deprivation; access based only on price and the ability to pay results in discrimination. Demand is highly sensitive to weather and geographically focused. Typically, many consumers can be affected by the same factors that increase demand at the same time. This makes the demand on local and regional networks and commodity markets subject to extreme peaks and valleys.

Moreover, for the vast majority of consumers and over the relevant range of economic values, reliability is an externality. This is a network industry in which the fate of each depends upon the actions of all. Individuals cannot create their own reliability or capture its full value in private transactions.[11] Allocation of costs and benefits in this shared network is a difficult and ultimately arbitrary task.

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[10] *Webster's Third New International Dictionary, Unabridged* (Springfield, MA, 1986) defines a substitute as "something that is put in the place of something else or is available for use instead of something else." This is in contrast to the definition of deprivation, "to take away, to take something away from." Turning out the lights or turning off the air conditioning is not a substitute.

[11] It has now become apparent that the value of peak load reduction is far higher than the market clearing price at the peak. Marcus, William B., and Greg Russzon, *Cost Curve Analysis of the California Power Markets*, (JBS Energy, Inc., September 29, 2000), estimates the value of peak shaving at between 5 and 10 times the market clearing price. Borenstein, Severin, *The Trouble With Electricity Markets* (January 2001) (hereafter, Borenstein,

The price elasticity of market demand is very low in the short-term and low in the long-term. The demand side cannot be counted on to discipline abusive pricing behavior. Inflexibility of demand and its sensitivity to weather renders the market volatile and vulnerable to abuse. [12] The best evidence from electricity markets is that the short run elasticity of demand is considerably less than -.1. In other words, a 10 percent increase in price results in less than a 1 percent decrease in demand. In San Diego, where prices doubled during the summer of 2000, the elasticity of demand was less than .03.[13] A recent study finds that elasticities of demand exhibited in programs targeted at demand reduction are quite low.[14] The model programs achieve elasticities in the range of .03 to .1.[15] Long run elasticities may be somewhat higher, but they are generally considered to be considerably less than 1.[16]

Trouble), uses an example in which the value of reduced demand is just under four times the market price. He argues that the ISO should capture this externality. The point is that it is highly unlikely that this externality will be internalized in direct, bilateral market transactions.

[12] Phillipovic, Dragana, *Energy Risk: Valuing and Managing Energy Derivates* (New York: McGraw-Hill, 1998), p. 3, cites a number of factors that distinguish energy from other commodities, but makes it quite evident that the need to physically consume the product on a real-time basis is the central factor.

[13] Bushnell, James and Erin Mansur, *The Impact of Retail Rate Deregulation on Electricity Consumption in San Diego* (University of California Energy Institute, Program on Workable Energy, April 2001).

[14] Hirst, Eric, and Brendan Kirby, *Retail-Load Participation in Competitive Wholesale Electricity Markets* (prepared for the Edison Electric Institute and the Project for Sustainable FERC Energy Policy, December 2000).

[15] Id., citing Braithwaite, S., "Customer Response to Market Prices – How Much Can You Get When You Need it Most?" *EPRI International Energy Conference*, Washington, D. C., July 2000), and Schwarz, et al., Industrial Response to Real-Time Prices for Electricity: Short-Run and Long-Run (University of North Carolina, December 2000).

[16] Reviews of dozens of studies can be found in Bohi, Douglas, *Analyzing Demand Behavior: A Study of Energy Elasticities* (Baltimore: Resources for the Future/Johns Hopkins, 1981) and Pyndyck, Robert, S., *The Structure of World Energy Demand* (Cambridge: MIT Press, 1979). Joskow, Paul and Richard Schmalensee, *Markets For Power: An Analysis of Electric Utility Deregulation* (Cambridge: MIT Press, 1984), concluded that many geographic markets would exhibit market power problems, in large part because the empirical evidence dictated the use of low elasticities of demand.

> We made two assumptions about the short run elasticity of demand (the percentage reduction in demand caused by a 1 percent increase in price) at this point. The first (low) assumption was that demand elasticity equaled –0.1; the second (high) was that it equaled –0.5. These are consistent with available econometric evidence.

A decade and a half later, Rose, Kenneth, *Electric Restructuring Issue for Residential and Small Business Customers* (Columbus, OH: National Regulatory Research Institute, June 2000), reviewed more recent literature and found short run elasticities in the range of .2 (citing Branch, E. Ralph, "Short Run Income Elasticity of Residential Electricity Using Consumer Expenditure Survey Data," *Energy Journal*, 14:4, 1993) and long run elasticities of about 1.0 (citing Hyman, Leonard, S. *America Electric Utilities: Past, Present and Future*

B. SUPPLY

Because of the basic physics of electricity, the production, transportation and distribution networks are extremely demanding, real-time systems. Electricity cannot be stored economically. The system requires perfect integrity and real time balancing much more than other services and commodity systems do.[17] The infrastructure to produce, transport and deliver electricity is extremely capital intensive and inflexible. It takes a long time to build and bring power plants and transmission lines into service and they last a long time. Thus, the ability to expand supply in the short and medium term is severely limited.[18] This is the critical factor that creates volatility and vulnerability to the abuse of market power on the supply-side.[19]

Empirical studies show that strong economies are achieved by coordinating electricity supply and demand.[20] Before restructuring, the electricity industry was a reasonably well-run,

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[Arlington, VA; Public Utilities Reports, 1988]). In analyzing the California market, Borenstein and Bushnell state that "We have run simulations for elasticities 0.1, 0.4, and 1.0, a range covering most current estimates of short-run and long-run price elasticity."

[17] Gegaux, Douglas and Kenneth Nowotny, "Competition and the Electric Utility Industry," *Yale Journal on Regulation*, 10:63, 1997; Gilsdorf, Keith, "Testing for Subadditivity of Vertically-Integrated Electric Utilities," *Southern Economic Journal*, 18:12, 1995: Henderson, J. Stephen, "Cost Estimation for Vertically Integrated Firms: the Cost of Electricity," M. A. Crew (Ed.), *Analyzing the Impact of Regulatory Change in Public Utilities* (Lexington, MA: Lexington Books, 1985); Hirst, Erick and Brenda Kirby, "Dynamic Scheduling: The Forgotten Issue," *Public Utilities Fortnightly*, April 15, 1997; Kaserman, David L. and John W. Mayo, "The Measurement of Vertical Economies and the Efficient Structure of the Electric Utility Industry," *Journal of Industrial Economics*, 29:5, 1991; Kwoka, John E. Jr., *Power Structure: Ownership, Integration, and Competition in the U.S. Electricity Industry* (Boston: Dordrecht, 1996); Roberts, Mark J., "Economies of Density and Size in the Production and Delivery of Electric Power," *Land Economics*, 62:4, 1986.

[18] Hirst, Eric and Stand Hadley, "Generation Adequacy: Who Decides," *Electricity Journal* (October 1999) and Borenstein, *Trouble*, argue for market-based solutions to ensure capacity sufficiency on the basis of demand side responsiveness, not supply-side construction of reserves.

[19] Pirrong, Stephen Craig, *The Economics, Law and Public Policy of Market Power Manipulation* (Boston: Kluwer, 1996), pp. 10, 24, 59, 70, identifies storage and transportation costs, as well as low elasticities of demand as critical factors making market manipulation more likely.

[20] Gilsdorf, Keith, "Testing for Subadditivity of Vertically-Integrated Electric Utilities," *Southern Economic Journal*, 18:12, 1995: Henderson, J. Stephen, "Cost Estimation for Vertically Integrated Firms: the Cost of Electricity," M. A. Crew (Ed.), *Analyzing the Impact of Regulatory Change in Public Utilities* (Lexington, MA: Lexington Books, 1985); Hirst, Erick and Brenda Kirby, "Dynamic Scheduling: The Forgotten Issue," *Public Utilities Fortnightly*, April 15, 1997; Kaserman, David L. and John W. Mayo, "The Measurement of Vertical Economies and the Efficient Structure of the Electric Utility Industry," Journal of Industrial Economics, 29:5,

complex, integrated network that was under some stress.[21] Creation of markets for electricity services leads to a huge growth in the number of transactions conducted every day and creates heavy administrative requirements. An entity that once maintained real-time balance as an insulated operation that could oversee its own supply, demand and delivery must now contract to achieve real-time balance simultaneously in five, six or seven different markets over broad geographic areas.[22] This is a daunting task[23] that consumes substantial resources.[24]

Accidents have a special role in market networks such as these. Because of the demanding physical nature of the network, accidents are prone to happen. Because of the volatile nature of the commodity, accidents tend to be severe. Because of the integrated nature of the network and demanding real-time performance, accidents are highly disruptive and difficult to fix. To keep things in balance, the system needs either plentiful reserves close at hand, ample amounts of transmission capacity readily available to move abundant

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1991; Kwoka, John E. Jr., *Power Structure: Ownership, Integration, and Competition in the U.S. Electricity Industry* (Boston: Dordrecht, 1996); Roberts, Mark J., "Economies of Density and Size in the Production and Delivery of Electric Power," *Land Economics*, 62:4, 1986.

[21] Mistr, Alfred E. Jr., "Incremental-Cost Pricing: What Efficiency Requires," *Public Utilities Fortnightly*, January 1, 1996; Oren, Shmuel, S., "Economic Inefficiency of Passive Transmission Rights in Congested Electricity Systems with Competitive Generation," *The Energy Journal*, 18:1, 1997, "Passive Transmission Rights Will Not Do the Job," *The Electricity Journal*, 10:5, 1997; Ostroski, Gerald B., "Embedded-Cost Pricing: What Fairness Demands," *Public Utilities Fortnightly*, January 1, 1996; Radford, Bruce W., "Electric Transmission: An Overview, *Public Utilities Fortnightly*, January 1, 1996: Volpe, Mark J., "Let's Not Socialize Transmission Rates," *Public Utility Fortnightly*, February 15, 1997. Bohi, Douglas and Karen Palmer; "The Efficiency of Wholesale vs. Retail Competition in Electricity, *The Electricity Journal*, October 1996; Gegaux, Douglas and Kenneth Nowotny, "Competition and the Electric Utility Industry, *Yale Journal on Regulation*, 10:63, 1997, Cornelli, Steve, "Will Customer Choice Always Lower Costs?," *The Electricity Journal*, October, 1996.

[22] Geographic scope is needed to achieve what network economists call pool effects in network industries, Stabell, Charles B. and Oysteing D. Fjeldstad, "Configuring Value Chains for Competitive Advantage: On Chains, Shops and Networks," *Strategic Management Journal*, 19: 1998, or load balancing in the electric utility industry, Cooper, *Economics.*

[23] Earle, Robert L, Phillip Q. Hanser, Weldon C. Johnson and James D. Reitzes, "Lessons from the First Year of Competition in the California Electricity Market," *The Electricity Journal* (October 1999), describe the process in a context that finds the potential for market power and inefficiency.

[24] Federal Energy Regulatory Commission, Staff Report to the Federal Energy Regulatory Commission on the Causes of the Pricing Abnormalities in the Midwest during June 1998 (Washington, D.C., 1998) (hereafter, FERC, Staff Report), p. 3-2; Public Utilities Commission of Ohio Report, Ohio's Electric Market (June 22-26,

supplies from far away, or a great deal of load that can be quickly shed. Most electricity markets do not have those luxuries today,[25] or any chance of acquiring them any time soon.

In sum, the elasticity of supply is low. The best evidence from California and elsewhere is that the short run supply elasticity is considerably less than 1. In fact, the supply elasticity is probably less than .2 on the basis of 1999 prices.[26] This is probably a higher price elasticity than observed in 2000-2001, which suggests a supply elasticity considerably less than .1 for the peak of 2000.[27] Short-term supply responses are constrained by the difficulty of storing electricity. Provision for reserve margins is uncertain in a competitive market because the provision of reserves is unattractive to business interests, unless peak prices are extremely high. Consequently, electricity markets free of reserve planning and coordination may be chronically tight or subject to extreme price instability.

Transmission services are particularly strained under current conditions. The interstate highway system for the movement of electrons is inadequate and was not designed to handle market transactions. [28] Transmission capacity is constrained and extremely difficult to expand for environmental and social, not economic, reasons.[29] Getting approval to site new transmission lines is also complicated and time consuming because of the negative impact on public spaces and concerns about public health. Similar constraints on the availability of

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1998); *What Happened and Why: A Report to the Ohio General Assembly* (Columbus, OH, 1998) (hereafter, Ohio Report), pp. 20-21; Kiah, E., *Thoughts on Wild Prices*, July 1998, DOE, Outages.

[25] Cambridge Energy Research Associates (CERA), *Electric Power Trends: 2001* (2000); *High Tension: The Future of Power Transmission in North America* (August 2000) (hereafter, CERA, *High Tension);* Stipp, David, "The Real Threat to America's Power," *Fortune*, March 5, 2001.

[26] Puller, Steven L., "Pricing and Firm Conduct in California's Deregulated Electricity Market" (Power, November 2000).

[27] Marcus and Russon.

[28] CERA, *High Tension.*

[29] Brendan, Kirby and Eric Hirst, "Maintaining Transmission Adequacy in the Future," *Electricity Journal* (1999), acknowledge the primary importance of noneconomic factors.

distribution exist.[30] Wires are difficult to repair or replace in response to outages.[31] This places a premium on flexibility of supply and reserve margins, but neither of these is well accommodated in the industry.[32]

C. SEVERE MARKET CONDITIONS MEAN MARKET POWER IS A PERVASIVE PROBLEM

Low elasticity of demand and supply are now recognized as the most critical factor in rendering the market volatile and vulnerable to abuse. When demand is inelastic, consumers are vulnerable to price increases, since they cannot cut back or find substitutes for their use of the commodity. When supply cannot respond quickly to price, producers gain a strong interest in withholding supplies to increase prices.

The conceptual depiction of the exercise of market power over price is presented in its simplest form in Exhibit 1 and Exhibit 2. The exercise of market power allows suppliers to set price above their costs and achieve above normal profits. Scherer and Ross – two leading, liberal economists – describe this concept as follows, in the terms identified in Exhibit 2.

> The profit-maximizing firm with monopoly power will expand its output only as long as the net addition to revenue from selling an additional unit (the marginal revenue) exceeds the addition to cost from producing that unit (the marginal cost). At the monopolist's profit-maximizing output, marginal revenue equals marginal cost. But with positive output, marginal revenue is less than price, and so the monopolist's price exceeds marginal cost. This equilibrium condition for firms with monopoly power differs from that of the competitive firm. For the competitor, price equals marginal cost; for the monopolist, price exceeds marginal cost…
> [The] Figure .. illustrates one of the many possible cases in which positive monopoly profits are realized; specifically, the per-unit profit margin P_3C_3 times the number of units OX_3 sold. As long as entry into the monopolist's

[30] Department of Energy, *Interim Report of the U.S. Department of Energy's Power Outage Supply Study Team*, January 1999 (hereafter, DOE, *Outages*), Finding 30.
[31] DOE Outages, Findings 9, 31.
[32] DOE Outages, Findings, 1, 16.

> market is barred, there is no reason why this profitable equilibrium cannot continue indefinitely.[33]

Landes and Posner – two prominent, conservative economists -- offer a similar concept, described as follows with reference to Exhibit 3. [34]

> Our concept of market power is illustrated in [Exhibit 3] … where a monopolist is shown setting price at the point on his demand curve where marginal cost equals marginal revenue rather than, as under competition, taking the market price as given. At the profit-maximizing monopoly price, pm, price exceeds marginal cost, C', by the vertical distance between the demand and marginal cost curves at the monopolist's output, Qm; that is, by pm -C'.

The most frequent starting point for a discussion of the empirical measurement of the price impact of monopoly power is the *Lerner Index.* The *Lerner Index*, is defined as

M= (Price – Marginal Cost)/ Price.

> Its merit is that it directly reflects the allocatively inefficient departure of price from marginal cost associated with monopoly. Under pure competition, M=0. The more a firm's pricing departs from the competitive norm, the higher is the associated Lerner Index value. A related performance-oriented approach focuses on some measure of the net profits realized by firms or industries.[35]

Conceptually, the Lerner Index is at the center of the definition of market power in this and several other proceedings ongoing at the FERC. This is the index of market power used by the California Independent System Operator (CAL-ISO) in documenting abuses in the California market.

Returning to Exhibit 2, the Lerner Index represents the ratio of the monopoly overcharge (P_3 - C_3) divided by the total price (P_3). The total value of the overcharge is

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[33] Scherer, F. M. and David Ross, Industrial *Market Structure and Economic Performance* (Boston: Houghton Mifflin, 1990, Third edition), pp. 21…22; Shepherd, William, G., *The Economics of Industrial Organization* (Engelwood Cliffs, N.J.: Prentice Hall, 1997, Fourth edition), presents a similar view.

[34] Landes, W. M. and R. A. Posner, "Market Power in Anti-trust Cases," *Harvard Law Review*, 19: 1981. Interestingly, the first economic text cited by Landes and Posner (at note 6) was the 1980 edition of Scherer and Ross.

[35] Scherer and Ross, at 70…71.

derived by multiplying the per unit overcharge times the total number of units sold (OX_3). This is equal to the area of the rectangle P_3 BA C_3. Both Scherer and Ross and Landes and Posner note that direct empirical measurement of the Lerner Index is difficult to obtain. Therefore, economists transform these price cost analyses into other economic measures for which they have data or which they can estimate.

Scherer and Ross describe a series of profitability measures. The measures of profitability include profit margins, return on equity and return on investment.

> As a surrogate, researchers have chosen diverse profitability measures that can be used, with varying degrees of reliability, as proxies for the evaluation of price above marginal cost.
>
> A good long-run approximation to the Lerner index is the ratio of supra-normal profits to normal cost. This is approximated by the ratio:
>
> $$\overline{\pi}_S = \frac{\text{Supra-normal profit}}{\text{Sales revenue}}$$
>
> where supra normal profit = sales revenue – noncapital costs – depreciation – (total capital x competitive cost per unit of capital).
>
> Second-best surrogates falling into three categories.
>
> One is the accounting rate of return on stockholders' equity:
>
> $$\overline{\pi}_E = \frac{\text{Accounting profits to stockholders}}{\text{Book value of stockholders equity}}$$
>
> Or on capital:
>
> $$\overline{\pi}_E = \frac{\text{Accounting profits + interest payments}}{\text{Total Assets}}$$[36]

Landes and Posner take the discussion in a different direction. The price/cost margin is converted to the reciprocal of the elasticity of demand. They transformed the index into an

[36] Scherer and Ross, at 415...416.

expression that used the market share of the dominant firm and decomposed the elasticity of demand into two components.

> We point out that the Lerner index provides a precise economic definition of market power, and we demonstrate the functional relationship between market power on the one hand and market share, market elasticity of demand, and supply elasticity of fringe competitors on the other.

$$L = \frac{(P - C)}{P} = \frac{1}{E_d} \qquad \frac{S}{e_m^d + e_j^s (1 - s_i)}$$

where:

S = the market share of the dominant firm

e_m^d = elasticity of demand in the market

e_j^s = elasticity of supply of the competitive fringe

s_i = market share of the fringe

In words, this formula says that the markup of price over cost will be directly related to the market share of the firm and inversely related to the ability of consumers to reduce consumption (the elasticity of demand) and the ability of other firms (the competitive fringe) to increase output (the elasticity of this supply).

Interestingly, the point of the Landes and Posner article was to argue against the rote use of market shares in market power analysis. This has recently become a major focal point of debate in the electric utility industry. One aspect of particular concern to Landes and Posner is critically important in the electric industry – the elasticities of supply and demand.

> Market Share Alone Is Misleading. - Although the formulation of the Lerner index in equation (3) provides an economic rationale for inferring market power from market share, it also suggests pitfalls in mechanically using market share data to measure market power. Since market share is only one of three factors in equation (2) that determine market power, inferences of power from share alone can be misleading. In fact, if market share alone is used to infer power, the market share measure in equation (2), which is determined without regard to market demand or supply elasticity (separate factors in the equation), will be the wrong measure. The proper measure will attempt to capture the influence of market demand and supply elasticity on market power.[37]

Once one brings these elasticities into play in an industry like electricity, the analysis become extremely troubling. Landes and Posner point out that when demand elasticities are low, market power becomes a substantial problem – the formula "comes apart."

> [T]he formula "comes apart" when the elasticity of demand is 1 or less. The intuitive reason is that a profit-maximizing firm would not sell in the inelastic region of its demand curve, because it could increase its revenues by raising price and reducing quantity. Suppose, for example, that the elasticity of demand were .5. This would mean that if the firm raised its price by one percent, the quantity demanded of its product would fall by only one-half of one percent. Thus its total revenues would be higher, but its total costs would be lower because it would be making fewer units of its product.[38]

Raising price in these circumstances necessarily increases the firm's profits, and this is true as long as the firm is in the inelastic region of its demand curve, where the elasticity of demand is less than 1.

> If the formula comes apart when the elasticity of demand facing the firm is l or less, it yields surprising results when the elasticity of demand is just a little greater than 1. For example, if the elasticity of demand is 1.01, equation (la) implies that the firm's price will be 101 times its marginal cost. There is a simple explanation: a firm will produce where its demand elasticity is close to one only if its marginal cost is close to zero, and hence a relatively low price will generate a large proportional deviation of price from marginal cost.[39]

[37] Landes and Posner, at 947.
[38] Landes and Posner, at 942.
[39] Landes and Posner, at 942.

In simple terms, when we talk about market forces, we mean the ability of consumers to cut back or shift their demand and the ability of producers to increase their output in response to price increases -- we mean supply and demand elasticities. If these elasticities are too small, market forces are weak and the exercise of market power will take place. The formula "comes apart" because real world markets with elasticities this low cannot work well. Firms raise prices to increase their profits because they do not lose enough sales to competitors, or because consumers lack alternatives.

As we have seen, electricity presents a very severe market from this perspective. Supply and demand elasticities are extremely low by these standards. The presumption must be that market power will be abused – real world experience certainly supports that conclusion. The FERC bears a heavy burden of proof in proposing to rely on markets to deliver electricity at rates that are not inflated by the exercise of market power. As discussed in the next section, the SMD does not adequately address the problem of market power.

D. SEVERELY CONSTRAINED MARKETS MEAN EXCESSIVE SCARCITY RENTS ARE A PERVASIVE PROBLEM

The inelasticity of supply and demand gives rise to a second deviation from a typical competitive market; excessive rents. An economic rent is "a payment to a factor in excess of what is necessary to keep it at its present occupation."[40] More importantly, "in perfect competition, no rents are made by any factor, because changes in supply bid prices of inputs and labor down to the level just necessary to keep them employed."[41]

In economic theory, these sources of overcharges could be competed away if supply and demand elasticities were high and electricity markets worked well. In reality, because of

[40] Pearce, George, *The Dictionary of Modern Economics* (Cambridge, MA: MIT Press, 1984), p. 124.
[41] Bannock, Graham, R.E. Banock and Evan Davis, *Dictionary of Economics* (London: Penguin, 1987), p. 128.

the economic characteristics and social impacts of the electricity industry, supply and demand do not respond. The results are elevated prices and a transfer of wealth from consumers to producers that achieves little or no real costs savings or efficiency gains.

Excessive scarcity rents accrue where changes in supply are slow or nonexistent, [42] exactly the circumstances that apply to electricity markets. The supply curve is so steep (supply is so inelastic) that the scarcity rents make up the vast majority of the market price, as demand moves toward the peak. Supply cannot respond to price signals, so the owners of existing facilities just collect windfall profits. The high rates of return that result from scarcity rents are unjust and unreasonable, just as excessive returns resulting from abuse of market power.

While the FERC worries about ensuring that adequate scarcity rents are embodied in prices so that generators can cover their costs, it is well established in the economic literature that excessive scarcity rents can be eliminated without harming economic efficiency. [43] Thus,

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[42] Teece, David, J. and Mary Coleman, "The Meaning of Monopoly: Antitrust Analysis in High-Technology Industries," *The Antitrust Bulletin* (Winter 1998), p. 819, define scarcity rents as:

> In many contexts where knowledge and other assets underpin a firm's competitive advantage, additional inputs cannot simply be purchased on the market to expand output… historically at least, economists have associated Ricardian rents with scarce natural resources like land or iron ore.

The origin of the concept has been associated with land, hence it is occasionally referred to as ground rents (Rutherford, Donald, *Dictionary of Economics* (Routledge: London, 1992), p. 137):

> As land was regarded in **classic economics** as the only fixed factor of production, it alone earned rent. However, as any factor of production can be fixed in supply, 'rent' can be earned by any factor of production. Popular examples of factors with an **inelasticity of supply** abound; labor can earn economic rent as persons with rare talents (e.g. opera singers and top sports players) have high earnings largely consisting of economic rent.

[43] Since supply of a fixed asset does not respond to price changes, there is little or no dead weight loss, as Taylor, p. 350, puts it:

> Economic rent is the price of anything that has a fixed supply. Economic rent is also sometimes called *pure rent*. Economic rent is a significant concept in economics precisely because the quantity supplied does not depend on the price. Thus, a tax on economic rents would not change the amount supplied; it would not affect economic efficiency or cause a deadweight loss.

the FERC's over zealous pursuit of scarcity rents does not contribute to its obligation to promote efficiency in the industry.

Scarcity rents also pose a transitional problem in electricity markets. Existing facilities have proven to be far more valuable than their book costs, which are all that can be reflected in regulated rates. If utilities capture those plants at book value, but can price them at market in the future, the cost of electricity increases. The assets that would earn these rents have gained their advantage from historic utility financing. Unless the market windfall is passed back to the consumers, electricity prices increase. If they are not passed back to consumers, they can be used by incumbents, as a cross-subsidy, to frustrate competition.

The definition of just and reasonable rates is quite clear and it does not admit an excess scarcity rents. A just and reasonable rate is one that recovers for the seller the cost of service plus a reasonable return. If scarcity rents result in returns that are not reasonable, then the rates are unjust. Given the nature of the electricity industry, the FERC must be on its guard against excessive scarcity rents. As discussed in the next section, it is not and, as a consequence, the rates under the SMD are very likely to embody excessive scarcity rents and therefore not be just and reasonable.

E. THE RISK OF UNJUST AND UNREASONABLE RATES IS PERVASIVE UNDER CURRENT CONDITIONS IN MOST ELECTRICITY MARKETS

The prevalence and huge magnitude of these potential sources of excess prices poses a major challenge for the FERC. Abandonment of cost-based ratemaking creates numerous and substantial opportunities to demand unjust and unreasonable rates.

Exhibit 4 uses the actual supply curve for Florida to identify and distinguish scarcity rents and monopoly rents. The order of magnitude between these two sources of excessive

prices is very large. Even in a competitive market, the price of electricity would likely rise. The theoretical market-clearing price in Florida – marginal cost as represented in the cost curve – would be about 50 percent higher than the regulated price. The scarcity rents created by the steep supply curve are very large. The amount collected in scarcity rents would be about $2 billion. The market price of electricity including scarcity rents would rise to about $39/MWH, well above the cost of $25.5/MWh. In California in 2000, excessive scarcity rents were in the range of 40 to 50 percent.[44]

The exercise of market power would drive prices even higher. A single firm, acting alone but knowing that a substantial part of its capacity will be needed in many hours of the year, would have the ability to raise prices substantially. Substantial markups can be expected in virtually every hour in which the pivotal supplier is called upon. In the dominant firm case, prices would rise to in excess of $500 per MWh for a few hours and would be above $100 per MWh for about 2 percent of the hours. In the dominant firm case, the average price would rise to almost $46 per MWh from the regulated price of $25.5 and the competitive price of $39. In the cartel case, prices would hit the $1,000 cap almost 10 percent of the time and prices would be above $100 about a third of the time. The average price would rise to over $370 per MWh. Before the meltdown in California, we would never have considered such a possibility, but that is the price that was sustained in California for almost half a year, during the off-peak period.

Exhibit 5 shows the results of a number of analyses of markets. It includes simulations and actual results. The most extensive problem occurred in California, [45] but

[44] Bornstein, Bushnell and Wolak.

[45] Hildebrandt, Eric, Further Analysis of the Exercise and Cost Impacts of Market Power in California's Wholesale Energy Markets (Department of Market Analysis, California Independent System Operator, March

virtually all markets, even those like PJM and the upper Mid-west that are well endowed with transmission capacity and excess generation, have been beset by the problem.

The actual experience in electricity markets substantiates this analysis. For the first year of the reliance on the spot market in California, the exercise of market power has been estimated to have increased costs by 22 to 30 percent, driving prices up by $400 million to $600 million.[46] From 1998 to the summer of 2000, well over a billion dollars of rents was collected in California.[47]

Policymakers are struggling to avoid a similar problem in Montana.[48] As recently as April 2000, Montana was a very low cost state, with the price of electricity forty percent below the national average. However, with restructuring industrial customer prices went "to market" very quickly and their rates almost quadrupled, driving the statewide average price above the national average.[49] While the legislature made a deal with the merchant generator who bought most of the capacity in the state to keep residential rate increases "down" to *only* 50 percent when they "go to market,"[50] the public utility commission battled to keep prices at just and reasonable levels,[51] and a referendum to reclaim the resources and recapture the scarcity rents for consumer was on the November ballot.[52]

2001), Impacts of Market Power in California's Wholesale Energy Market: More Detailed Analysis Based on Individual Seller Schedules and Transactions in the ISO and PX Markets (Department of Market Analysis, California Independent System Operator, April 9, 2001); Sheffrin, Anjali, Empirical Evidence of Strategic Bidding in California ISO Real Time Market (Department of Market Analysis, California Independent System Operator, March 21, 2001).

[46] Borenstein, Busnell and Wolak, Diagnosing Market Power, pp. 32-33,

> The aggregate $\hat{}$TC/TC is 22.4%, amounting to total payments in excess of competitive levels equal to $494 million.a/

a/ Note that the percent increase in purchase cost, $\hat{}$ TC/(TC-$\hat{}$TC) was 29%.

[47] Cooper, *Reconsidering*.

[48] NRECA Energy Policy Department, *Retail Wheeling Report* (July 2001).

[49] EIA, *Electricity Average Revenue April 2001*.

[50] Ochenski, George, "Power Play," *Missoula* Independent, April 26, 2001; NRECA, *Retail Wheeling*, p. 33.

[51] Davis, Tina, "PPL Challenges Montana Limits on Power Rates," *The energy Daily*, July 11, 2001.

[52] Egan.

The abuse of market power and the impact of tight markets that have been so much in evidence in California are not limited to that market. PJM, the poster child for deregulation, has suffered similarly near vertical supply and the exercise of market power that parallels the problem in California in its early days.[53] In the PJM pool, the mark-up in the first year was estimated at 29 percent, increasing prices by $400 to $600 million.[54] In one week in 1998 in the Midwest, $500 million changed hands;[55] $70 million was collected in New York in one day.[56] The New England power pool experienced price run-ups.[57] In the UK, the mark-up of price over cost has been sustained at the 25 percent level over a long period of time.[58] Examination of bidding patterns in California and elsewhere makes it clear that strategic bidding takes place at many hours far from the peak (see Exhibits 6-9).

The result of withholding and excessive scarcity rents to drive prices far above costs is supranormal profits.[59] The CAL-ISO analysis shows that by February 2001, the costs of a new plant brought on line in California when the restructured market commenced in May 1998 would have been fully recovered in just three years.[60] Excessive returns have not escaped the attention of the analysts dealing with the situation in the UK, although that market

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[53] Bowring, et. al., Rose, *Other States;* Stoft, *PJM's Capacity Market;* Allen, Biewald and Schlissel; Rosen, et al.
[54] Mansur.
[55] Cooper, *Spike;* Earle, Robert L, Phillip Q. Hanser, Weldon C. Johnson and James D. Reitzes, "Lessons from the First Year of Competition in the California Electricity Market," *The Electricity Journal* (October 1999),
[56] Rosen, et al.
[57] McDiarmid, Dowden, and Davidson; Allen, Biewald and Schlissel; Rosen, et al.
[58] Wolfram, *Reform*, notes the following

> From 1992 to 1994, on average prices were 25 percent above the cost of the last plant needed to generate electricity in a given period. That suggests prices would have been substantially lower had they been set competitively. Since 1994, fuel prices have come down but electricity prices have not fallen accordingly. That suggests profits have risen and provides further evidence that prices are not responding to competitive forces.

[59] This is the line of discussion pursued by Landes and Posner.
[60] Combining the results of Hildebrandt, *Further Analysis*, Tables 3-1, B-1 and B-2, we calculate annual recovery of capital costs under actual prices in effect in California in the past three years as follows:

	NP15	SP15
Low Cost plant ($500/MWh@ 14%ROI)	46	32

has not exhibited the extreme dysfunction of the California market. As Wolak and Patrick put it, "the return to capital in this industry is increased by 25% as a result of this strategy."[61] Indeed, when windfalls become as massive as they have been in electricity markets, they distort economic incentives. Producers make more by withholding supplies (demonstrating a backward bending supply curve) than by increasing output.[62]

Reserve margins and excess capacity emerge as such critically important factors for maintaining system reliability and for disciplining market power that they deserve to be singled out for particular attention by policy makers. In a restructured industry, keeping the lights on involves two problems, not one. Not only must the electrons be available, but the consumer must also be able to afford to flip the switch.

Provision for reserve margins is uncertain in a competitive market because the provision of reserves is unattractive to business interests, unless peak prices are extremely high. Consequently, electricity markets free of reserve planning and coordination may be chronically tight or subject to extreme price instability.

Based on restructured market performance, reserve margins need to be well above traditional levels of 15 to 20 percent and perhaps as much as 30 to 40 percent to prevent the

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High cost plant ($600/MWH@16%ROI) 39 26

[61] Wolak, Frank A. and Robert H. Patrick, *Impact of Market Rules and Market Structure on the Price Determination Process in the England and Wales Electricity Market* (University Of California Energy Institute, Program On Workable Energy Regulation, February 1997

[62] That the concept is routine is attested to by its inclusion in introductory texts, see for example, Taylor, at 327-329; Adelman, Morris, "OPEC the Clumsy Cartel," *The Energy Journal*, 1:1980; Bohi, Douglas and W. David Montgomery, *Oil Prices, Energy Security and Import Policy* (Washington: Resources for the Future, 1982); Aperjis, Dimitri, *The Oil Market in the 1980s: OPEC Oil Policy and Economic Development* (Cambridge: Ballinger, 1982); Teece, David, "OPEC Behavior: An Alternative View," in James M. Griffin and David J. Teece (Eds.), *OPEC Behavior and World Oil Prices* (London: George Allen and Unwin, 1982); Adelman, Morris, "OPEC as a Cartel," in James M. Griffin and David J. Teece (Eds.), *OPEC Behavior and World Oil Prices* (London: George Allen and Unwin, 1982). Newberry, *Competition*, at 729, notes that Bolle's analysis, which seems to capture the essence of the California market, allows a backward bending supply function.

abuse of market power.[63] In addition to the normal operating reserve that the industry has required, there must also be a competitive, or economic, reserve whose primary function is to restrain pricing abuse.

The message that emerges from the real world experience in electricity markets is that they must be both unconcentrated and have substantial excess capacity if the abuse of market power is to be prevented. Bidders into the market must face the prospect that a substantial part of their capacity will not be called upon a significant part of the time if they bid high.[64] Analyses of other markets like Australia confirm this.[65] Simulations based on American cost

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[63] The Cal-ISO has argued for a dependable reserve of 14 to 19 percent, which translates into a nameplate reserve in the range of 20 to 25 percent. The analysis assumed that reserves are not owned by existing large generators or strategic actors, that they would be under an obligation to offer, and that import capacity of about 10 percent of peak is available. Relaxation of any of these assumptions would increase the reserve necessary to avoid market power. From a national policy perspective, deconcentrating markets and preventing withholding have proven extremely difficult. Assuming the availability of import capacity from neighboring markets implicitly suggests that the reserve margin in that market is larger, since spare capacity can be exported. Taking these factors into account from indicates the reserve margins necessary to prevent abuse are in excess of 30 percent of nameplate capacity.

[64] As we have noted, the market power problems were well known long before the California market was created. An early 1997 analysis of the UK market concluded that

> The most basic lesson is that competition in name is just that. Whether or not setting up an electricity market similar to the E&W [England and Wales] market will deliver benefits to consumers in the form of lower prices, depends on the market structure and the details of the market rules governing its operation. Subtle differences in the rules of the market can dramatically enhance the ability of generators selling into the market to set prices substantially in excess of their marginal and average costs…
>
> Given the number of firms in the market and the market rules, what is important to limiting market power is reducing the size of the largest firm relative to all others. The key to the success of this capacity-withholding bidding strategy at obtaining high prices is that frequently the largest generator knows that a significant portion of its capacity will be called upon, regardless of the prices it bids. If all generators are equal in size and the total system load is significantly less than the sum of their capacities, then only very rarely, if ever, will the largest generator know with virtual certainty that a substantial fraction of its capacity will be required to serve the market… The larger is the extent of demand uncertainty faced by the largest firm relative to capacity, the less likely this capacity withholding strategy will be successful (Wolak, 1997, p. 46.).

This expression – "if all generators are equal in size and the total system load is significantly less than the sum of their capacities" – is vastly different than the current status of most electricity markets, restructured or otherwise. The need for excess capacity and the need to deconcentrate markets are quite substantial. The abuse of market power in the UK, which is the object of the above quote, was taking place with reserve margins of over 20 percent (Id, at p. 30).

[65] In Australia, where the market power problem did not occur early in the process of implementing deregulation, the primary reason appears to have been the existence of excess capacity of 40 percent. Simulations in advance

and demand data, for system with twenty percent excess capacity, lead to a similar conclusion.[66] Similarly, in analyzing the California market, even at moderate levels of demand (in the 300th highest capacity hour of December), a substantial market power threat exists.[67]

F. MARKET DESIGN CANNOT SOLVE THE PROBLEM OF WEAK MARKET STRUCTURE

The FERC devotes a great deal of attention to market design – bidding mechanisms and decision rules framed in terms of auction theory. Unfortunately, no amount of market design can compensate for flawed market structure. In fact, there is no conflict between auction theory and structural analysis because under the necessary conditions for competitive

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of the opening of the Australian market identified both highly competitive and the possibility of strategic bidding, but excess capacity loomed large in the market, Brennan, Donna and Jane Melanie, "Market Power in the Australian Power Market," *Energy Economics*, 1998 (20). Wolak, Frank A., "An Empirical Analysis of the Impact of Hedge Contracts on Bidding Behavior in A Competitive Electricity Market," *International Economic Journal*, 2000 (14), analyzed the early pricing behavior in the market and found that excess capacity was a central driver of bidding behavior, p. 34,

> How did the major generators get themselves in a situation where aggressive bidding and low prices yield the maximum profit possible? Stated differently: Why did the generators sign contracts for such a large fraction of their capacity? … Clearly, a major factor in the decision of the large generators to sign these contracts is excess generation capacity to serve both the VPX and NSW SEM. Even in the absence of contract cover being held by any participants, the large amount of capacity available to serve each state market relative to that state's demand in the vast majority of half-hours for the year implies that all generators face a significant probability all of their capacity will not be dispatched if they do not bid aggressively.

[66] Rudkevich, Alesandr, Max Duckworth, and Richard Rosen, "Modelling Electricity Pricing in a Deregulated Generation Industry: The Potential for Oligopoly Pricing in a Poolco," *The Energy Journal*, 1998 (19).

> We found that the average price mark-up over the course of one year is 16% in a market with five identical firms, and 11% for ten identical firms. For purposes of reference, the DOJ and FERC guidelines state that a market with more than ten identical firms is "unconcentrated." In addition, we find that in order to reduce the annual PCMI [Price Cost Margin Index] to 5%, the poolco would require almost thirty identical firms.

[67] Borenstein, Severin and James Bushnell, "An Empirical Analysis of the Potential for Market Power in California's Electricity Industry," *Journal of Industrial Economics*, 47:3, September 1999. A linear interpolation for the 372nd hour based on Table V., predicts an average price of about $80 per MWh in December. The actual price in December 2000 was $317 and February hit $363, but the model did not include the jump in the cost of gas and NOx. Under the FERC ceiling price, calculation generators were allowed to add about $230/MWh, due to the cost of these two inputs, so the model predicts the exercise of market power well. They find that market power disappears at just 33,000 MW of demand. With a maximum peak demand in the month of just over 41,000 MW this implies a peak capacity for the month of 44,000 MW. In other words, at the 300th hour where market power is eliminated, excess capacity is at least 29 percent.

structure, the mechanism of the auction does not matter.[68] The fundamental issue is the underlying competitive structure.[69] Not surprisingly, the FERC's set of assumptions is roughly equivalent to a perfectly competitive market made up of small competitors. After a decade of debate over electricity markets between the auction theorists and the supply function theorists it is quite clear that the auction and supply function approaches lead to the same conclusions.[70] Inadequate market forces will frustrate any bidding mechanism.[71]

The problem is simply that those who have been concerned about efficient auction design have failed to ask the basic question, "does the empirical reality comport with the theoretical assumptions underlying the market?" The traditional market structure concern with the elasticity of supply and demand plays out in the auction literature as a "deviation" from the assumption that bidders in California face uncertainty.[72] The empirical evidence from the United Kingdom, the oldest "deregulated" market, whether framed in terms of market

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[68] Klemperer, Paul, *The Economic Theory of Auction* (Nuffield College, July 2000).

[69] McDiarmid, Robert C., Lisa G. Dowden, and Daniel I. Davidson, "A Modest Proposal: Revoke the Nobel Prize? Recognize the Limitations of Theory? Or Grant a License to Steal?," *Electricity Journal*, January/February 2001. Needless to say, the general literature on this topic is huge. To keep the citations manageable, we note only those sources that have been directly entered into the current debate or deal explicitly with electricity markets.

[70] Newberry, David M., "Competition, Contracts, and Entry in the Electricity Spot Market," *Rand Journal of Economics*, 29:4, 1998, citing in particular Wolfram, Catherine, D, "Strategic Bidding in a Multi-unit Auction: An Empirical Analysis of Bids to Supply Electricity in England and Wales," *Rand Journal of Economics*, 29, 1998. Newberry cites von der Fehr, N-H.M. and D. Harbrord, "Spot Market Competition in the UK Electricity Industry," *Economic Journal*, 103 1993, as the origin of the auction theory approach. Brunekreeft, Gert, "A Multiple-unit, Multiple-period Auction in the British Electricity Spot Market," *Energy Economics*, 23, 2001, reviews this debate from the auction side.

[71] Some analysts emphasize the problem of imperfect institutions interacting with market power (see "Comments and Testimony of The Utility Reform Network (Turn) and the Utility Consumers Action Network (UCAN) of the November 1, 2000, Order Proposing Remedies for California Wholesale Electric Markets," before the Federal Energy Regulatory Commission, *San Diego Gas & Electric, et al.*, Docket No. EL00-95-000, November 22, 2000 (hereafter TURN); "Testimony of Eric Charles Woychik, on behalf of TURN and UCAN, *San Diego Gas & Electric, et al.*, Docket No. EL00-95-000, November 22, 2000). This view should be distinguished from those who argue that imperfect institutions are the primary, if not sole, cause of the problems (see Chandley, John D., Scott Harvey and William Hogan, *Electricity Market Reform in California*, November 22, 2000 and *Issues in the Analysis of Market Power in California*, October 27, 2000).

[72] Klemperer, Economic *Theory*, at 30, stresses the important of uncertainty in avoiding tacit collusion, which is a particular problem in electricity markets, with cites to general auction literature.

structure or auction theory, invariably and consistently demonstrates the exercise of market power.[73] Needless to say, the evidence from California leads to the same conclusion and it is clear that the institutions chosen were particularly vulnerable to market power abuse.[74] An early analysis from the auction literature gives the most direct indication of this.[75] The empirical evidence that Klemperer cites on the U. K. shows not only that market power is being exercised, but that the bidding strategies fit his auction-theory based explanation.[76] The California bidding certainly fits the pattern, although the detailed econometric studies will be published years after the disaster commenced.[77] One of the most interesting hints is the CAL-ISO analysis of support prices (next highest and next lowest bid).[78]

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[73] Newberry, David, "Viewpoint: Freer Electricity Markets in the UK: A Progress Report," *Energy Policy*, 26:10, 1998, pp. 746-747; "Interview – UK Power Pool Says Reduces Price Surges," *Reuters*, April 16, 1999; Green, R.J. and D. M. Newberry, "Competition in the British Electricity Spot Market," *Journal of Political Economy*, 100:5, 1992; Newberry, David M. And Michael G. Pollitt, "The Restructuring and Privatisation of Britain's CEBG -- Was It Worth It?," *The Journal of Industrial Economics*, 45:3, 1997; Green, Richard, "The Electricity Contract Market in England and Wales," *The Journal of Industrial Economics*, 47:1, 1999; Wolfram, Catherine, "Measuring Duopoly Power in the British Spot Market," *American Economic Review*, 89: 1999.

[74] McDiarmid, *Modest Proposal.* Kahn, Alfred, et al., *Pricing in the California Power Exchange Electricity Market: Should California Switch from Uniform Pricing to Pay-as-Bid Pricing* (California Power Exchange, January 23, 2001) argue, based primarily on experimental results, that the bidding system does not matter much, compared to the problems of market power, tight supplies and inelastic demand and given the ability of those with market power to adapt their bidding strategies to any system. To the extent that the purpose is to prevent attention from being directed away from the important issues, this is a useful analysis, but the arguments miss the fundamental problem identified by other analysts and the victims of the one-price system. The FERC cites this study in defense of its proposal, *Prospective Mitigation Order*, at 24, but with no notice of the critique of the approach. The critics of the one-price system focus on the massive economic rents and the lottery nature of the one-price system, which exposes a few very high price offers to little risk, a bidding strategy which is consistent with the backward bending supply curve (see the sources cited at notes 12 and 13). Klemperer, *Economic Theory*, presents extensive empirical documentation, as opposed to theoretical discussions or experimental results that support the conclusion that the one price auction is particularly vulnerable to abuse of market power as real world conditions deviate from theoretically optimal assumptions (see also Klemperer, Paul, *What Really Matters in Auction Design* (Nuffield College, February 2001)).

[75] Bolle, Friedel, "Supply Function Equilibria and the Danger of Tacit Collusion: The Case of Spot Markets for Electricity," *Energy Economics*, April 1992; see also "Necessary Conditions for Efficient Multiple-bid Auctions, in R. Nau, E. Gronn, M. Machina and O. Bergland, *Economic and Environmental Risk and Uncertainty: New Models and Methods* (Kluwer, 1997).

[76] Klemperer, *Economic Theory*, argues that signaling and disciplining is more easily accomplished in a one-price auction. Interestingly, antitrust law makes it clear that coordinated activity need not be collusive.

[77] Puller, "Pricing and Firm Conduct," finds strong evidence of static market power and weak evidence of dynamic gaming in the first year of the market. There is a general consensus that gaming increased in subsequent years (Kahn, Michael and Loretta Lynch, *California's Electricity Options and Challenges: Report to*

Empirical and theoretical analysis of auction also identifies institutional problems that drive the result away from optimal, or competitive market equivalent outcomes. In particular, where participants enter repeatedly into auctions with multiple units the ability to game the process and earn excess profits is apparent.[79] Perhaps the clearest lesson to be learned from this literature is that given the vulnerability of these markets and the huge windfalls to be gained, market participants will devote a great deal of effort to developing strategies to game any system.

It is noteworthy that this problem was also recognized in the theoretical market structure literature. An improvement in the Landes and Posner formula was immediately suggested.[80] It can be adjusted to take into account the key factor of strategic interactions. A term can be included which adjusts for the special impact of the market shares of other firms.

$$L = \frac{(P - C)}{P} = \frac{S(1 + k)}{e_m + e_j(1 - s_i)^{d_s}}$$

where k = the effect of strategic interaction

If the likelihood of strategic interaction will reinforce the efforts of the dominant firm to raise prices, then k can be set positive. If there is likely to be a uniquely vigorous competitive response, then k can be set negative. When k equals zero, there is no strategic interaction effect. Estimating the value of k is a subjective process, but it does add an

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Governor Gray Davis, (hereafter, *Options*) Chapter III; Marcus, William and Jan Hamrin, *How We Got into the California Energy Crisis*, JBS Energy (2000).

[78] Sheffrin, *Empirical Evidence*.

[79] Klemperer, *Economic Theory,* at 30-31 citing Newberry, *Competition,* and Wolfram, *Strategic Bidding,* identifies four characteristics of the electricity market that are a concern and lead to concerns about "implicitly collusive bidding schedules." These are: a small number of bidders, capacity constraints, frequent repetition of auctions, and difficulty of entry.

important element to relating market structure to performance through conduct. The auction literature teaches that repeated auctions with multiple units create conditions in which non-collusive signaling, paralleling and sympathetic behaviors increase the likelihood that market power will be abused. This line of reasoning has had a strong basis in market structure analysis.[81]

Weak market structure and a market design that has repeated interactions of a small number of players leads to the analytic conclusion that regulators must be keenly aware of collusive and noncollusive conduct among market players. It cannot focus solely on dominant or pivotal suppliers. Economic policy has come to routinely recognize this issue.

The Department of Justice Merger Guidelines are oriented toward conditions under which certain types of anticompetitive behaviors are sufficiently likely to occur to require regulatory action.

> The rule of thumb reflected in all iterations of the Merger Guidelines is that the more concentrated an industry, the more likely is oligopolistic behavior by that industry.... Still, the inference that higher concentration increases the risks of oligopolistic conduct seems well grounded. As the number of industry participants becomes smaller, the task of coordinating industry behavior becomes easier. For example, a ten-firm industry is more likely to require some sort of coordination to maintain prices at an oligopoly level, whereas the three-firm industry might more easily maintain prices through parallel behavior without express coordination.

The Merger Guidelines recognize that market power can be exercised with coordinated, or parallel, activities and even unilateral actions.

> Market power to a seller is the ability profitably to maintain prices above competitive levels for a significant period of time.*/ In some circumstances, a sole seller (a "monopolist") of a product with no good substitutes can maintain

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[80] Ordover, J.A. and R. D. Willig, "Herfindahl Concentration, Rivalry, and Mergers," *Harvard Law Review*, 95: 1982.

[81] Since the FERC has been oblivious to the problem, we can find clear reasoning in the U.S. Department of Justice, Merger Guideline, issued April 2, 1992, revised April 8, 1997.

> a selling price that is above the level that would prevail if the market were competitive. Similarly, in some circumstances, where only a few firms account for most of the sales of a product, those firms can exercise market power, perhaps even approximating the performance of a monopolist, by either explicitly or implicitly coordinating their actions. Circumstances also may permit a single firm, not a monopolist, to exercise market power through unilateral or non-coordinated conduct --conduct the success of which does not rely on the concurrence of other firms in the market or on coordinated responses by those firms. In any case, the result of the exercise of market power is a transfer of wealth from buyers to sellers or a misallocation of resources.
>
> */ Sellers with market power also may lessen competition on dimensions other than price, such as product quality, service or innovation.[82]

Lawrence Sullivan and Warren S. Grimes, describe the DOJ approach as follows:

> The coordination that can produce adverse effects can be either tacit or express. And such coordination need not be unlawful in and of itself. According to the 1992 Guidelines, to coordinate successfully, firms must (1) reach terms of interaction that are profitable to the firms involved and (2) be able to detect and punish deviations. The conditions likely to facilitate these two elements are discussed separately, although they frequently overlap.
>
> In discussing how firms might reach terms for profitable coordination, the Guidelines avoid using the term "agreement," probably because no agreement or conspiracy within the meaning of Section 1 of the Sherman Act is necessary for the profitable interaction to occur. As examples of such profitable coordination, the Guidelines list "common price, fixed price differentials, stable market shares, or customer or territorial restrictions." Sometimes the facilitating device may be as simple as a tradition or convention in an industry.

They go on to note the mechanisms that might be used and the usefulness of the HHI in this regard.

> Oligopoly conditions may or may not require collusion that would independently violate Section 1 of the Sherman Act. A supracompetitive price level may be maintained through price leadership (usually the leader is the largest firm), through observance of a well-established trade rule (e.g., a convention of a 50 percent markup in price among competing retailers), or through strategic discipline of nonconforming members of the industry…

[82] Horizontal Merger Guidelines, at section 0.1.

> To the extent that one or very few members of a concentrated industry have much higher market shares than other members, the opportunities for strategic disciplining may expand… The expanded ability of the larger firm to coerce price discipline is reflected in the Herfindahl-Hirschman Index (HHI), which will assign a high concentration index to an industry with a very large participant. An industry with the same number of participants, each of them roughly equal in size, will have a lower index.[83]

The area of noncollusive, oligopoly behavior has received a great deal of attention in the academic literature. A variety of models have been developed in which it is demonstrated that small numbers of market participants interacting in the market, especially on a repeated basis, can learn to signal, anticipate, and parallel one another to achieve outcomes that capture a substantial share of the potential monopoly profits.

III. LEGAL AND POLICY CONTEXT

A. THE SMD AND UNDUE DISCRIMINATION: A SOLUTION IN SEARCH OF A PROBLEM

The FERC has failed to demonstrate that the problem the Standard Market Design claims to solve, undue discrimination in access to transmission services, merits the radical restructuring and deregulation it proposes. The cure is far worse than the disease.

There has been no showing by the FERC that undue discrimination is the cause of a significant number of unjust and unreasonable rates or substantial inefficiencies in interstate transactions.[84] Indeed, the FERC's own efforts to estimate the benefits of the elimination of undue discrimination through the formation of the Regional Transmission Organizations found remarkably little "efficiency" gains to be had. The cost-benefit calculation prepared

[83] Herbert Hovenkamp, *The Law of Antitrust: An Integrated Handbook*, Hornbook Series (St. Paul: West Group, 2000), pp. 596-597.

[84] ¶ 105 states findings on discrimination that are not supported by actual evidence of discrimination. Rather, the findings assert that current arrangements permit the undue discrimination, the abuse of vertical market power, or a seams problem.

under the direction of the FERC to support this rule is unconvincing. Cost savings of 3 to 5 percent were projected,[85] even though transaction cost increases, market imperfections and market power are not taken into account. Even these small gains have been challenged as being too large.[86]

Given that the FERC could find little in the way of harm from the purported discriminatory operation of the grid, we should not be surprised to find that the claim in the SMD NOPR that there is extensive undue discrimination in interstate markets lacks specificity.[87] The FERC makes no effort to directly link discrimination to negative market outcomes.

The FERC's evidentiary record on undue discrimination is thoroughly corrupted. The FERC relies on a few formal complaints, in which findings of undue discrimination were

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[85] ICF Consulting, *Economic Assessment of RTO Policy*, Prepared for the Federal Energy Regulatory Commission, February 26, 2002, Tables ES-1, ES-2. Casazza, John, A., "Electricity Choice: Pick Your Poison: A. Errant Economics? B. Lousy Law? C. Market Manipulation? D. All Three?," *Public Utilities Fortnightly*, 2001 (March 1), identifies efficiency gains in generation of 3 percent. This latter figure is consistent with the actual experience in the U.K., which began phasing in a competitive retail electric market in 1990, and suggests that caution is necessary in the estimation of benefits. Efficiency gains have not been very large and the exercise of market power is a constant threat to consumer gains from restructuring, resulting in the gains not being passed through to consumers.

> Our preferred case is pro-privatization allowing for the expansion of nuclear power under the CEBG, ignoring environmental gains (whose cash value is hard to measure), and discounting at the public sector discount rate of 6%, for which case the net present value of benefits is L9.6 billion, equivalent to a permanent cost savings of about 0.16p/kWh, compared to an average 1994/95 price of about 2.8p/kWh, or a cost savings of 5% forever...
>
> In any exercise of this kind, a systematic attempt to understand the workings of the industry raises yet further questions for analysis and discussion. First, who benefited from the cost reductions that we found – was it taxpayers and shareholders as Yarrow [1992] suggests, rather than consumers? Our rather tentative answer is yes, given the large increase in profits and the relatively small decline in real final prices, and we have attempted to quantify these redistributive impacts, though they are subject to larger error margins than the simple efficiency gains (Newberry, David M. And Michael G. Pollitt, "The Restructuring and Privatisation of Britain's CEBG -- Was It Worth It?," *The Journal of Industrial Economics*, 45:3, 1997, pp. 297-298).

[86] "Comments on the RTO Cost Benefit Analysis Report by the New Mexico and Rhode Island Offices of Attorney General, The Rhode Island Division of Public Utilities and Carriers, the Public Advocate for the State of Maine and the Colorado Office of Consumer Counsel," before the Federal Energy Regulatory Commission, Electricity Market Design Structure, Docket Nos. RM01-12-000, etc., May 3, 2002.

[87] ¶¶ 36, 39 and 43 assert the existence of an inability to obtain transmission or a delay in scheduling, but present no evidence.

never made (¶ 50) and informal hotline calls, statements and public conferences and complaints. These are hearsay at best, lies at worst. The FERC's claim of undue discrimination is based on the complaints of companies who have proven to engage in an extensive and repeated pattern of market manipulation and fraud across a number of markets and over a number of years. In light of revelations of recent trading abuses, their claims of abuse cannot be given any credence by the Commission. How many of the transactions they claim were frustrated by discrimination were really wash trades, or reflected manipulation of schedules?

The second problem with the FERC's evidentiary record on undue discrimination is that many of the practices it cites as unduly discriminatory may, in fact, be efficient actions taken by entities possessing economies of scale or exhibiting economies of vertical integration. The benefits of vertical integration (¶ 48) and the long term commitment of load serving entities to their franchise customers (¶ 36) are, in fact, driven by efficiency. They reduce transaction costs and lower the cost of capital. The FERC's proposal destroys these economies based on the mislabeling of them as undue discrimination, needlessly driving up the cost of electricity.

A handful of isolated, anecdotal and misconstrued examples of undue discrimination in the interstate transmission jurisdiction does not create an evidentiary basis to support the radical overthrow of the current approach to managing the provision of transmission service in the interstate jurisdiction or the dramatic extension of the FERC jurisdiction into retail transactions that bundle transmission services.

B. UNDUE DISCRIMINATION VS. JUST AND REASONABLE RATES

The Federal Power Act is quite clear and explicit that **every** rate or charge for **transmission or electricity** subject to FERC jurisdiction must be just and reasonable.

> All rates and charges made, demanded, or received by any public utility for or in connection with the transmission or sale of electricity subject to the jurisdiction of the Commission, and all rules and regulations affecting or pertaining to such rates or charges shall be just and reasonable, and any such rate or charge that is not just and reasonable is hereby declared to be unlawful.[88]

Reliable service at just and reasonable rates is the goal of the Act that the FERC must achieve, with or without market mechanisms. Under the Federal Power Act reliance on markets and market forces is a means to an end, not an end in itself. Moreover, they alone cannot determine the reasonableness of rates, for as the Supreme Court noted, "Congress could not have assumed that 'just and reasonable' rates could conclusively be determined by reference to market price."[89] The FERC may rely upon market-based prices in lieu of cost-of-service regulation to assure a just and reasonable result but in the absence of a competitive market it must return to cost of service regulation.[90] In other words, the FERC cannot abandon cost of service regulation until and unless it finds that markets are sufficiently competitive to produce a result that approximates cost of service regulation. The FERC must return to cost of service regulation if competition in a market subsequently proves to be inadequate to yield just and reasonable outcomes.

The just and reasonable standard requires that rates not be exorbitant under sections 205 and 206. The statutory aim is "to protect consumers from exorbitant prices and unfair

[88] FPA Section 205(a), 16 U.S.C. s 824(d)(a).
[89] *FPC v.Texaco, Inc,* 417 U.S. 380.

business practices";[91] not permit abusive pricing practices because "[r]ates that permit exploitation, abuse, overreaching or gouging are *by themselves* not just and reasonable,"[92] The Commission's responsibility is to allow only reasonable returns by ensuring "just and reasonable rates which will be sufficient to permit [suppliers] to recover [their] cost of service and a reasonable return on [their] investment").[93] Thus exorbitant prices, abusive practices and unreasonable profits are three interconnected criteria for evaluating whether rates are just and reasonable. Underlying all three is the cost of the service.

Under the SMD, the FERC requires the creation of new interstate entities called Independent Transmission Providers (ITP) and requires them to establish six different electricity markets. It has no assurances, whatsoever, that the rate demanded (bids offered) for any of the six electricity products it requires will bear any relationship to the cost of production. Moreover, under the single price auction, which is the only type of market it will allow, the price paid for all but the last unit offered is likely to exceed the cost of production.[94] It takes a heroic set of assumptions, which have rarely, if ever, been observed in the electricity industry, to claim that this scheme will produce prices that are just and reasonable even on average.

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[90] In *Elizabethton Gas Co. v. FERC,* 10 F. 3d 866, 870 (D.C. Cir. 1993), the court ruled that the *Farmers Union* compels a return to cost-based rates based on substantial evidence to ensure that rates will fall within a zone of reasonableness.

[91] *Public Sys. v. FERC,* 606 F.2d ¶973, 979, n. 27 (D.C. Cir. 1997).

[92] *Farmers Union Central Exchange v. FERC,* F.2d ¶1486, 1509 (D.C. Cir. 1984), emphasis added.

[93] *FPC v. United Gas Pipe Line Co.,* 386 U.S. 237, 243 (1967).

[94] We find it ironic that in rejecting our complaint against the WSPP, the court cited a decision by the FERC to move to average prices as a rate ceiling, which had roughly the same effect in lowering prices at that time as such a move would have today, see *Environmental Action and Consumer Federation of America*, at 5:

> Accordingly, on its own initiative and as an alternative to the WSPP's system of caps based on the costs of its highest cost participants, FERC developed and published uniform energy and transmission rate ceilings. These were designed to reflect the cost of a "hypothetical" average utility and were set at about half the level of the ceilings in force during the experiment.

The FERC cannot make such heroic assumptions; it must demonstrate the justness and reasonableness of rates with much greater certainty. The Federal Power Act "makes unlawful all rates which are not just and reasonable, and does not say a little unlawfulness is permitted."[95]

In the pricing of transmission services, the FERC does not even pretend to be attempting to establish charges that bear any relationship to costs. Here it explicitly adopts a value-based approach that intends to charge whatever the market will bear.

> The adoption of a market-based locational marginal pricing (LMP) transmission congestions management system is designed to provide a mechanism for allocating transmission capacity to those who value it most.[96]

Locational marginal pricing makes no reference to the cost of providing transmission. It derives the price strictly from the scarcity value of electricity at adjacent nodes of the system. Any similarity between the price and cost of transmission under this approach would be purely accidental and almost certainly infrequent. Deregulating of transmission pricing, as the FERC has done by totally severing the relationship between the cost of transmission and its price, violates the Act. Setting the price of transmission at the highest possible level, as the FERC has done by relying on locational marginal pricing, inevitably creates massive scarcity rents that will accrue to transmission owners, even if the abuse of market power in transmission markets can be prevented by the new, and untried, ITPs.

The FERC's approach to the provision of transmission services also contradicts its obligation to promote efficient operation of the interstate transmission network. As suggested above, the obsession with the deintegration of transmission and generation destroys the

[95] *Texaco*, 417 U.S. 399.

economies of vertical integration. This complete deintegration is necessary to implement LMP. Further, LMP will frustrate long term planning because the FERC insists on relatively short periods for allocation of congestion revenue rights, abolishes the right to designate load and resources and cannot create the authority in the ITPs to actually implement expansion of the grid.

C. THE SMD, MARKET POWER AND JUST AND REASONABLE RATES

To the extent that FERC claims legal authority to rely on market-based rates, it cites a series of D.C. Circuit Court rulings as noted above. These decisions were not appealed to the Supreme Court, perhaps because they were narrow in scope. Given the fact that the Supreme Court has taken a rather different view of Congressional intent in defining just and reasonable, whenever the issue arrives before it, we believe the radical change FERC has proposed goes well beyond what the Supreme Court will tolerate. More importantly, we believe the FERC proposal does not even comport with the District Court rulings.

In an introductory economic text book, under a set of assumptions that bear no resemblance to the electricity industry, the FERC's single price auction for electricity and its value-based pricing of transmission, could produce just and reasonable rates. While that might produce an A in economics 101, such a theoretical exercise cannot satisfy the demands of the Federal Power Act. The FERC must document the existence of market forces and must have "empirical proof" that competition "would ensure that the actual price is just and reasonable."[97]

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[96] "Commission Proposed New foundation for Bulk Power Markets with Clear, Standardized Rules and Vigilant Oversight," *Federal Energy Regulatory Commission*, Docket No. RM01-12-000, Press Release, July 31, 2002, p. 2.; NOPR, ¶¶ 140, 257.

[97] *Farmer's Union* , at 1510.

The FERC's claim that ridding the interstate jurisdiction of undue discrimination will ensure just and reasonable rates is simply wrong. Nondiscriminatory access may or may not be a necessary condition for effectively competitive markets, but it certainly is not a sufficient condition. At least three other conditions are necessary and probably more important to ensure effectively competitive markets – vigorous competition in generation, adequate physical infrastructure for transmission, and transparent institutions for trading.

The hope that sufficient competition in generation would grow to discipline market power that was created by the Energy Policy Act of 1992 is fading fast. The landscape of the competitive generation sector has changed dramatically since the FERC issued its analyses of the market power problem. The extent of bogus trading and market manipulation has moved far beyond anything the FERC was confronted with in the past. The competitive generation sector has all but collapsed as investors run scared. Competition without competitors cannot result in just and reasonable rates.

Similarly, the FERC's claim that the *ex ante* market monitoring and market power mitigation are sufficient to protect the public are unconvincing. The FERC has barely begun to scratch the surface of market abuses in the West Coast fiasco. For example, the recent revelations about manipulation of the price of gas threaten the fabric of the FERC's market power mitigation, since the price of gas will drive the benchmark competitive price. Structural separation of gas and electricity may be necessary to prevent abuse in electricity markets. Our comments in *Environmental Action and the Consumer Federation of America v. FERC* (one of the central proceedings the FERC cites as a justification for its proposed rule) demanded an investigation into the manipulation of natural gas markets in California. After months and months of delay, the FERC has barely begun that investigation.

To date, the FERC has not only failed to deal with past abuses, but it has still not instituted a mechanism to identify situations under which there is a high likelihood of market power abuse. The FERC has failed to revise its approach to defining when market-based rates authority is granted. The FERC has inappropriately granted market-based rate authority in many cases and therefore created the problem of unjust and unreasonable rates being charged. In other words, the FERC itself has created a larger problem of unjust and unreasonable rates by permitting deregulation when inadequate competition exists. The current proposal to eliminate undue discrimination will only make matters worse, not better.

Given that the industry is in a state of turmoil and the evidentiary basis is weak, FERC's radical, "one-size fits all" deregulation proposal poses a severe threat to the public interest, as outlined in the following comments.

IV. THE SMD CANNOT CREATE JUST AND REASONABLE RATES

The previous section has pointed toward a large number of areas in which the SMD is inadequate to deal with the reality of electricity markets. Our review of the conditions in the electricity market indicates that they favor sellers at the expense of buyers. The imbalanced market conditions indicate that the exercise of market power is highly likely and that even in the absence of market power, excessive scarcity rents are likely to accrue to sellers. Under these circumstances, the SMD should lean heavily against creating conditions that enable the exercise of market power and the control of excessive scarcity rents. Unfortunately, the SMD does neither.

- The SMD fails to address the underlying structural problems in the industry in any meaningful way.
- In the design of the market, it is driven by a desire to ensure that scarcity rents are maximized, favoring sellers at the expense of buyers.
- Its monitoring and mitigation of market power is totally in adequate.

As a consequence, the SMD does not have a reasonable probability of ensuring that rates will be just and reasonable.

A. STRUCTURALLY COMPETITIVE MARKETS ARE A NECESSARY CONDITION FOR DEREGULATION – MARKET MONITORING AND MITIGATION ARE NOT SUFFICIENT

It is a widely accepted principle of economic practice that structural remedies are vastly superior to conduct or behavioral remedies. Under the severe conditions that obtain in electricity markets, it is clear that both are needed, but the fundamental principle is even more important. No amount of market design, which is essentially a behavioral matter, can

compensate for a lack of actual competition. Prices cannot be presumed to be just and reasonable unless markets are effectively competitive at the structural level. Moreover, because market fundamentals (elasticities of supply and demand) are so weak, the structural standards must be particularly high. Because the market fundamentals are so weak, conduct oversight must also be highly developed.

Institutionalizing a game of cops and robbers, as the Commission has proposed with its overemphasis on market monitoring and market power mitigation, will not protect the public interest because the robbers have more resources and much greater incentives than the cops. The Commission must ensure that the structures are competitive before it deregulates markets (i.e., before it grants market-based rate authority), so that it can diminish the incentives for the robbers. In other words, instead of relying so heavily on a regime that increases the probability that the cops can catch the robbers, the FERC must develop a regulatory mechanism that decreases the probability that the crime will be profitable.

The structural criteria by which the FERC proposes to deregulate markets and the behavioral rules it proposes to oversee those markets are entirely inadequate to protect the public interest and they will not ensure that rates are just and reasonable. They focus in on a single actor (from a structural point of view) and a restricted set of products (from a conduct point of view). The FERC must design its structural test of competitiveness taking into account not only the unilateral actions of dominant firms (pivotal suppliers), but also potentially collusive actions and non-collusive games of multiple market players. It is utter hypocrisy to claim that collusive and non-collusive games of market participants have not or cannot raise the price of electricity to unjust and unreasonable levels. Given the recent experiences in electricity markets, the FERC must assume that this behavior will take place,

unless structural conditions are sufficiently competitive to prevent it. The number of competitors must be so large and the redundant capacity available sufficient to make even non-collusive games unprofitable for market participants.

One premise of the SMD is that most power sales will be made through bilateral contracts. Yet, there is no requirement that generators will enter into such contracts and, in fact, there is some disincentive for them to do so. Throughout the NOPR there is language around these markets being just a small part of the overall purchasing of energy, that buyers and sellers will continue to enact bilateral transactions. "Standard Market Design is premised on the use of bilateral contracts. While LSEs may purchase energy in the spot markets, these purchases should constitute a small percentage of their actual purchases."[98] However, there is no guarantee that sellers will be encouraged or required to enter into such transactions and thus no guarantee that buyers won't be forced to purchase larger and larger shares of their total energy need in the spot markets, making them more vulnerable to price fluctuations and higher prices.

And the language in the NOPR is inconsistent on whether bilateral contracts will constrain market prices or simply be another vehicle for paying them. Will "bilateral contracts generally reflect buyer and seller expectations of prices in spot markets"[99] or are "bilateral contracts…an effective way for a buyer to mitigate the market power of a seller"?[100] Clearly, it is the latter. Because the price of any power sold in the market (no matter the cost of producing it) will rise to the highest accepted bid, generators will have no incentive to enter into long-term contracts at lower rates. Sellers will expect to get the market price, either by

[98] Ibid., ¶405.
[99] Ibid., ¶409.
[100] Ibid., ¶227.

moving more of their sales into the market or by revising the price at which they are willing to enter into bilateral contracts.

That the FERC thinks this will happen is confirmed in the section on bidding rules for the day ahead energy market. One possible option laid out in the NOPR is for those suppliers with very high start-up costs to "submit bids that are self-schedules, that is, that would indicate an amount to be supplied at a location regardless of the applicable energy price. The supplier would receive the applicable market-clearing price for its energy. This option may be useful for suppliers with very high start-up costs such as nuclear facilities."[101] Yet if most power is to be supplied through bilateral contracts, nuclear facilities are exactly the type of power that we would expect to be under such contracts. We can only assume that the FERC does not really expect that most power will be provided through bilateral contracts.

Before the FERC deregulates a market, it must ensure that each of the markets in which electricity is traded – spot and bilateral – for each of the products it proposes to deregulate is structurally competitive all of the time. The Federal Power Act does not say that rates must be just and reasonable some of the time for some of the products subject to the FERC jurisdiction. Cost-based regulation covered all of the products all of the time. The FERC's deregulation cannot provide less protection.

After a decade of struggling to implement the Energy Policy Act of 1992, the FERC should know what the problem is. For technological, economic and social reasons, market forces are weak in the electricity sector. The SMD, as an experiment, would like to change some of these things (e.g. with demand-side bidding), but it cannot assume it will succeed in doing so and deregulate rates before it has demonstrated that the market disciplining

[101] Ibid., ¶271.

mechanisms can work. Until it can demonstrate that its approach has dramatically strengthened market forces, it cannot claim that rates will be just and reasonable.

The SMD devotes almost no attention to the issue of competitive structure. It is entirely focused on market design and market monitoring. In this it contradicts the generally correct view that structural remedies for market power are superior to conduct remedies. The FERC must demonstrate that the market is structurally competitive before it deregulates – i.e., relies on market-based rates. This means it must rely on empirical facts, not theoretical assumptions about markets.

The SMD leaves markets vulnerable to the abuse of market power through two fundamental oversights. The reserve margin requirement is far too low to create a bulwark against the abuse of market power. The 12 percent figure chosen by the FERC is barely at the level of operating reserves traditionally used in vertically integrated, non-market situations. It does not create an economic reserve, which is necessary to prevent the abuse of market power.

The FERC cannot abdicate its responsibility to ensure that rates are just and reasonable by stating that state authorities can adopt higher reserve margin requirements. The FERC must demonstrate on the basis of its own action within its jurisdiction that rates are just and reasonable. Based on the reserve margin requirements of the SMD, it has failed to properly exercise its charge to protect the public.

The SMD has failed to deal with a critically important structural issue – vertical integration between the gas market and the electricity market. It has now become apparent that natural gas prices in the West were manipulated by market participants who were active in both the electricity and natural gas markets. This manipulation strikes at the heart of the

fabric of the SMD, since a market clearing price in a single price auction is likely to be driven by the cost of natural gas. Structural separation between the natural gas and electricity markets may be the only way to effectively control this threat of abuse.

There are practical implications of this observation that could inform the FERC efforts to reform. For example, we recommend, as a practical matter that the FERC spend a substantial period of time demonstrating that the new regional transmission organizations prove that they can operate and expand the grid. It is folly for the FERC to launch transmission and generation markets when transmission facilities were never designed to support market transactions and are constrained. It must also adopt decision rules and benchmarks for market operation and market monitoring that yield theoretically just and reasonable rates. The SMD has failed to do so on both counts.

The FERC has proposed a highly complex series of markets to be operated by entities that do not presently exist in most of the country. The NOPR glosses over the logistics of creating and operating the proposed markets. Despite the current lack of entities to manage these markets, FERC assumes that they will be created and will seamlessly implement the multiple auctions. And they are multiple. The FERC has proposed day-ahead, real-time, and possibly pre day-ahead markets in energy, transmission service, regulation and frequency response, operating reserve-spinning, operating reserve-supplemental, as well as periodic markets for congestion revenue rights and the procurement of replacement reserves.

Implementing these markets will require coordination across a variety of entities and issues. The logistics of how some of these various coordinating activities will work are addressed in the NOPR. However, in many cases, neither the mechanics nor the issues to be resolved are even addressed.

ITPs will need to coordinate energy auctions with auctions in neighboring ITPs for energy that is to be sold across borders. They will need to synchronize decisions about energy purchases with decisions about scheduling transmission that will determine whether in fact the purchased energy can be transported from seller to buyer. If a buyer requests service at a receipt point and a seller offers at a delivery point, the ITP will have to compare all requests and offers not only for price but for feasibility of delivery and creating the least congestion in transmission. Because sellers could offer the same capacity in the various ancillary service markets, as well as the energy market, the ITP will need to determine results of various auctions and market prices simultaneously.

The FERC's authority and ability to create and oversee these entities is dubious. The ability of these entities to operate, plan and expand the transmission system is doubtful to say the least. There is no reasonable basis on which to conclude that the new institutional structure the FERC proposes for the interstate jurisdiction will result in just and reasonable rates.

At best, the effort to create these entities and markets is premature. The original concept of regional transmission organizations was essentially to create entities to administer the regional transmission grid in a non-discriminatory manner. For reasons outlined in our earlier comments in the relevant proceedings,[102] regional transmission organizations never came into existence, so the administrative approach to nondiscriminatory operation of the grid by an independent entity was never tried. The FERC essentially assumes it would have failed, and now declares the mandatory creation of entities to operate the grid with one-price spot auctions for six different electricity products and several components of transmission service.

There is no evidentiary basis for concluding that truly independent transmission organizations could not operate the grid in a non-discriminatory manner that would not expose the public to the risks and volatility of the spot market. The leap to spot markets without having created the institutional and physical infrastructure to support them places the consumer at great risk. Excessive scarcity rents that flow from inadequate physical transmission infrastructure and monopoly rents that flow from inadequately competitive generation markets are both very real dangers under the FERC's proposal. Both result in unjust and unreasonable rates.

It would be foolish, if not arbitrary and capricious, to abandon the regime of cost-based transmission services, which has performed reasonably well, in favor of a risky, spot market approach for which the FERC has failed to lay the proper groundwork.

In order to promote the public interest and ensure just and reasonable rates in the interstate jurisdiction, the FERC should start by creating interstate institutions to administer interstate transmission services. The FERC needs to demonstrate that these institutions can be brought into existence to effectively administer and expand the grid. These institutions should be allowed to rely on tried and true cost-based regulation, which controls both excessive scarcity rents and the abuse of market power. A survey of the grid will readily identify a round of high priority grid expansions. The regional organizations should demonstrate that they can operate and enlarge the grid. They should be allowed to rely on administrative approaches to implementing non-discrimination.

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[102] "Consumer Federation Of America, Request For Reconsideration Regional Transmission Organizations," *Federal Energy Regulatory Commission*, Docket No. RM99-2-000; Order No. 2000, January 20, 2000.

The new transmission organization can accomplish the fundamental goals of promoting efficient operation of the grid while preventing undue discrimination at just and reasonable rates by applying existing principles in a rigorous fashion:

- Least cost planning for grid expansion by conducting a competitive bidding process
- Implement security constrained least cost dispatch for grid operation
- Tariffs should be distance sensitive and based on actual cost
- All users of the grid should pay for their use out of one network access service

B. EXCESSIVE SCARCITY RENTS

Because of the strong likelihood that the severe market fundamentals will create excessive scarcity rents, the FERC must adopt decision rules that seek to squeeze those rents out. In establishing benchmarks, the FERC should choose the lowest possible price, which is what a competitive market would do. In a discussion of market power mitigation, the NOPR addresses increases in price that could result from possible "unanticipated and sustained market conditions that would give the ability and the incentive to exercise market power:"

> These kinds of events, which are not transitory, can provide opportunities to exercise market power even in a market that is normally workably competitive. … **Although market-clearing prices would be expected to rise in these situations, and perhaps sharply and significantly**, it may be important for the market to have the assurance that the price increases are attributable to the extreme circumstances and not to the exercise of market power.[103]

We would instead ask why we should accept the premise that prices for all energy should rise under these circumstances. The cost of the power that was produced and transmitted before the onset of the immediate market conditions would not have changed.

Why, therefore, should buyers suddenly pay "significantly" higher, even exorbitant, rates for this energy whose costs have not increased?

When an electron is bid into multiple markets – either product or geographic markets – the FERC should ensure that the electron sells at the lowest possible price. The lowest of bid prices would be the closest to the marginal cost at which the seller is willing to make the electron available. That is the theory underlying the FERC's single price auction; that must be the practice. The FERC's failure to apply the lowest price rule means, by definition, rates will not be just and reasonable under the SMD.[104]

When electrons are bid into multiple markets across time, FERC selects a solution that maximizes price, rather than minimizes it. When electrons are bid into a specific geographic area, it allows the bid price to include an opportunity cost of the price that could have been bid into another geographic market. Language elsewhere in the NOPR seems to indicate that in fact FERC's aim is to ensure highest price to sellers under any and all circumstances. Take for example the setting of prices for ancillary services in the day ahead market.

Because of the way that prices would be established in each market, the market into which each bidder of generation capacity or demand-side resource is scheduled would also be the market that is the most profitable for the bidder. That is because…the prices in each market would reflect marginal opportunity costs of the bidders in that market. Thus, the price in each market would be high enough to allow each accepted bidder in that market to receive at least as much profit as it could have received in any other market operated by the Independent Transmission Provider that it is technically capable of participating in.[105]

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[103] Ibid., ¶415, emphasis added.
[104] ¶ ¶ 234, 253, 260, 274.
[105] Ibid., ¶290, footnote 150.

Sellers in one market where the market-clearing price has been set would in fact be able to reap a higher price if such a rate were set in another market. This is accomplished by the creation of a new definition of marginal costs, one that has nothing to do with actual costs and everything to do with maximizing profits. Under this new definition, marginal cost equals the highest total bid cost of any seller which equals "the sum of: (1) the generator's availability bid per MW and (2) the opportunity cost of forgoing sales in other markets operated by the Independent Transmission Provider, expressed on a per-MW basis."[106] Sellers would now be compensated for the money they could have earned by selling the same resource into a different market. To call "lost" opportunity a cost of producing energy is simply incorrect; to institutionalize that end-users should pay producers this additional amount is beyond defense. The FERC should be protecting consumers, not producers. Finally, what is the justification for the FERC's assumption that ITPs will need to second-guess producers because the producers are not capable of protecting their own interests in their bidding offers?

After placing its faith in a single price auction, the FERC repeatedly jiggles the outcome of bidding to favor sellers at the expense of buyers. Bidders have a make whole provision in the uplift payment.[107]

The FERC establishes a safety-net bid cap, but them immediately offers the provision that "if the monitor establishes that some units may provide power at a cost that exceeds the safety-net, a higher price for those units would be justified."[108] Before this is allowed, there

[106] Ibid., ¶292.
[107] Ibid., ¶280. What's especially interesting about the hypothetical example in the footnote is that there is a math error and in fact the example shows a seller more than covering costs, not losing money.
[108] Ibid., ¶413.

would have to be agreement on what constituted the "cost" of producing the power in question and a mechanism for confirming the basis for this calculation.

There is a similar "scarcity" payment allowed for peaking units whose costs would not be recovered because the market price was set at marginal cost. Given the lack of clarity about exactly how marginal cost is being defined, there should be no additional payments allowed without explicit documentation that costs are not truly being covered.

The fact that the FERC is considering including in its marginal cost benchmark costs other than the rigorously defined real marginal cost of production is another deviation from the theory underlying the SMD. Any additional costs included in the benchmark will guarantee rates that are not just and reasonable.

C. MARKET POWER MONITORING: ALL, ALL, ALL, ALL

The empirical reality and real world experience of electricity markets makes it clear the FERC cannot focus on part of the market part of the time. It must monitor markets for the abuse of market power in

All hours: The FERC cannot look only at peak hours in monitoring for the abuse of market power. Withholding and strategic bidding have occurred and driven up prices during hours where demand was far from the peak in numerous markets.

All products: The FERC cannot focus only on selective products in spot markets in its monitoring for the abuse of market power. Unjust and unreasonable prices have been demanded and (because of market conditions) paid in bilateral contracts. If structural conditions are not adequate to ensure competitive outcomes, all products must be monitored.

All markets: The FERC cannot assume that it can rely on competitive spot markets to ensure competitive bilateral markets. The fact that the FERC recognizes it needs a reserve

requirement attests to the inability of short term markets to elicit long term supply. Indeed, existing interstate transmission organizations recognize they need long-term markets and that they have been plagued by market power problems.

All significant suppliers: The thrust of the past quarter century of economic analysis and the empirical evidence in electricity markets shows that unilateral actions by a dominant market participant are not the only sources of abuse of market power. Collusive and non-collusive behaviors by groups of large market participants can cause rates to be unjust and unreasonable, especially where interactions in the market are repeated.

The abuse of market power has certainly not been confined to peak periods where one or a few suppliers may control peak supply. For instance, California demand was at half its peak; in the U.K., bidding above marginal cost extends at least half-way down the supply curve. The abuse of market power appears to extend to all products and all contracts.

V. CONCLUSION AND RECOMMENDATIONS

The FERC's efforts to create a standard market design are vastly premature. The transmission network has not undergone a comprehensive review in decades and no planning process exits for grid expansion. To make up for the lost decade of the 1990's, FERC should devote a decade of coordinated resource planning to transmission, including mandated reserve margins and open access rules. Information exchanges must be developed before the FERC attempts to define market structure.

Based upon the analysis cited in these comments, the Consumer Federation of America and Consumers Union conclude that the Standard Electricity Market Design proposal is not in the public interest. Forcing all regions of the country to rely on single price auctions in spot markets and basing transmission services on a pricing principle that charges

"whatever the market will bear," with no relationship to actual costs, will not result in just and reasonable rates or promote efficient service. The Federal Power Act is quite clear and explicit that every rate or charge for transmission or electricity subject to FERC jurisdiction must be just and reasonable. Under the SMD, the FERC has no assurances, whatsoever, that the rate demanded (bids offered) for any of the six electricity products it requires will bear any relationship to the cost of production.

CFA and CU recommend an alternative (See Section IV) that allows the FERC to deal with any problems of undue discrimination without undermining the basis for just and reasonable rates in interstate jurisdiction:

- **A much less radical approach to independent transmission organizations** can control undue discrimination without exposing consumers to the risk of spot markets and auctions.
    - Least cost planning for grid expansion by conducting a competitive bidding process
    - Implement engineering driven, least cost dispatch for grid operation
    - Tariffs should be distance sensitive and based on actual cost
    - All users of the grid should pay for their use out of one network access service
- **Control both monopoly and excessive scarcity rents.** To the extent that the FERC relies on markets it must adopt decision rules and benchmarks for market operation and market monitoring that yield just and reasonable rates. In establishing benchmarks, the FERC should choose the lowest possible price, which is what a competitive market would do.
- **Market power mitigation must be much more aggressive.** FERC must also ensure that market monitoring detects all situations with the potential for the abuse of market power and mitigation measures effectively addresses these threats to just and reasonable rates. Market monitoring must cover all the bases: All hours, all products, all markets, all suppliers.

The FERC should withdraw approval of the market-based rates allowed under the fundamentally flawed approach that gave rise to the pervasive patterns of abuse that have taken place in these markets. The FERC needs to start with a clean slate and build an open and adequate transmission system and transparent information institutions.

EXHIBITS

EXHIBIT 1: CAUSES OF ELECTRIC UTILITY INDUSTRY MARKET FAILURE DEMONSTRATED BY THE FIRST THREE YEARS OF U.S. DEREGULATION

BASIC CONDITIONS: SUPPLY

Technology	Long lead times 5(7) 6(1),Delayed replacement 6(16) 11(2) Inability to store electricity 5
Product durability	Generation Outages 1(2-11, 4-6) 3(15) 5(40) 10(1-2), Transmission shutdowns 1(4-10), Failures take time to repair 6(9) Summer impairment of performance 6(7, 18, 22)

BASIC CONDITIONS: DEMAND

Price elasticity	Extremely low short run 2(24) 5(39) 11(2) Limited conservation 6(2,19, 23)
Substitutes	Lack of substitutes, Restriction on self-supply 8
Cyclical/seasonal	Weather-related demand 1(4-6) 2(37) 10(1-2), Inadequate reliability criteria 6(21)
Purchase method	Obligation to serve 1 (4-1) 2(25), Lack of incentive to cut back 1(4-4) 4(46)6(2, 19)

MARKET STRUCTURE

Number of sellers	Few sellers 2(ii) 3(21) 4(49-56) 5(6,7) 7
Number of buyers	Constrained demand by utilities 1(4-1) 2(25) 5(30,31), Constrained distribution 6(30) Limited end-user choice 5(42,57)
Barriers to entry	Transmission constraints 1(2-15,5-7)5 (11,12) Load pockets, inadequate system 6(10,32) Self-supply blocked 8()Emergencies 1(2-15), Substation inflexible 6(31)
Cost structures	High fixed
Vertical integration	Affiliate relations distort market 2(38) 6(38), Integration restricts entry 11(3)
Diversification	Utilities Add Brokerage 2(24,28) Inadequate Planning/Spending for maintenance 6(29,34 - 37)
Inadequate Market	Lack of timely, objective 1(5-3) 2(ii), Load projections 6(8), Unit ratings 6(11)
Information	Planning tools 6(13), Cable condition, incipient failure 6(5,14) Refusal to share best practices 6(15), Forecasting 6(17, 28) Inadequate notice 6(20) Dispatch software 6(27) Inadequate coordination Breakdown of coordination 1(2-37, 3-3), ISO lacks authority 6(4), Lack of data 6(6)

CONDUCT

Pricing behavior	Hoarding, gouging 4(65) 5(3,38) Above cost 10(1-4) 11(17) Reliance on nonfirm power 6(24) 10(2-1) 11(3)
Legal tactics	Defaults, abrogation of contracts, daisy chains, two-way deals1 (4-10, 5-2) 2(4) Refusal to provide market monitoring information 5(4) Inefficient short term sales 6(25), Records not preserved 6(33)
Regulation	Transmission rules create problems 1(4-40) 2(20) 11(3) Market rules not developed 6(3)

SOURCES: See next page

The analytic categories are from Scherer, F. M. and David Ross, Industrial *Market Structure and Economic Performance* (Boston, Houghton Mifflin: 1990.

The substantive references are as follows:

1 = Federal Energy Regulatory Commission, *Staff Report to the Federal Energy Regulatory Commission on the Causes of the Pricing Abnormalities in the Midwest During June 1998* (Washington, D.C.; 1998)

2 = Public Utilities Commission of Ohio Report, *Ohio's Electric Market: June 22-26, 1998, What Happened and Why: A Report to the Ohio General Assembly* (Columbus, Oh; 1998)

3 = Bohn, Roger E., Alvin K. Klevorick and Charles G. Stalon, Market Monitoring Committee of the California Power Exchange, *Report on Market Issues in the California Power Exchange Energy Markets* (August 17, 1998)

4 = Bohn, Roger E., Alvin K. Klevorick and Charles G. Stalon, Market Monitoring Committee of the California Power Exchange, *Second Report on Market Issues in the California Power Exchange Energy Markets* (March 9, 1999)

5 = Klein, Michael and Loretta Lynch, *California's Electricity Options and Challenges* (August, 2000)

6= Department of Energy, *Interim Report of the U.S. Department of Energy's Power Outage Supply Study Team*, January 1999; *Horizontal Market Power in Restructured Electricity Markets*, March 2000

7 = Department of Energy, *Horizontal Market Power in Restructured Electricity Markets*, March 2000

8= Alderfer, R. Brent, et al., *Making Connections: Case Studies of Interconnection Barriers and their Impact on Distributed Power Projects* (National Renewable Energy Laboratory, May 2000)

9 = Energy Information Administration, *The Changing Structure of the Electric Power Industry 1999: Mergers and Other Corporate Combinations*, December 1999

10 = Staff Report on the Federal Energy Regulatory Commission on Western Markets and the Causes of the Summer 2000 Price Abnormalities (November 1, 2000)

11= Wolak, Frank A., et al., "An Analysis of the June 2000 Price Spike in California ISO's Energy and Ancillary Service Market," *Market Surveillance Committee of the California Independent System Operator* (September 6, 2000)

EXHIBIT 2: SHERER AND ROSS ON MONOPOLIST PRICING

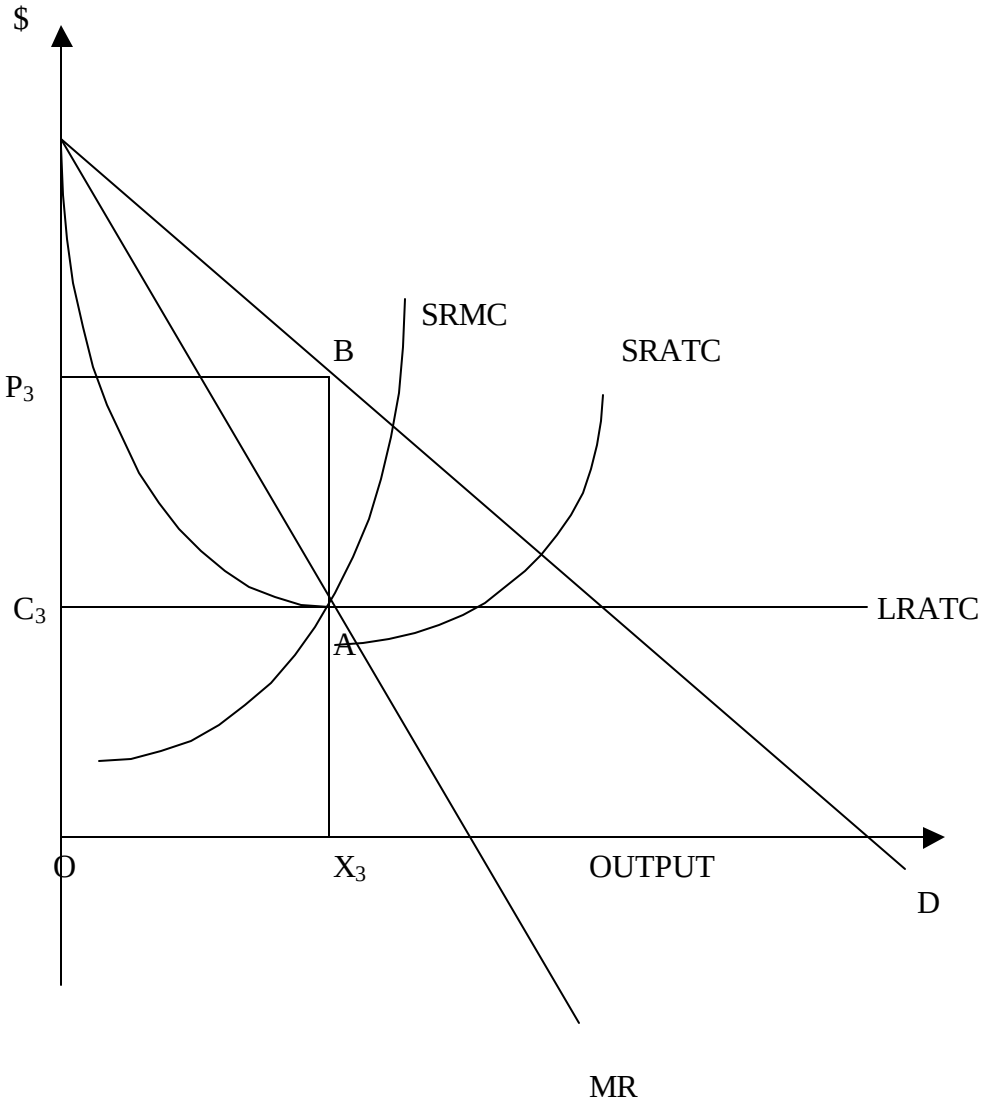
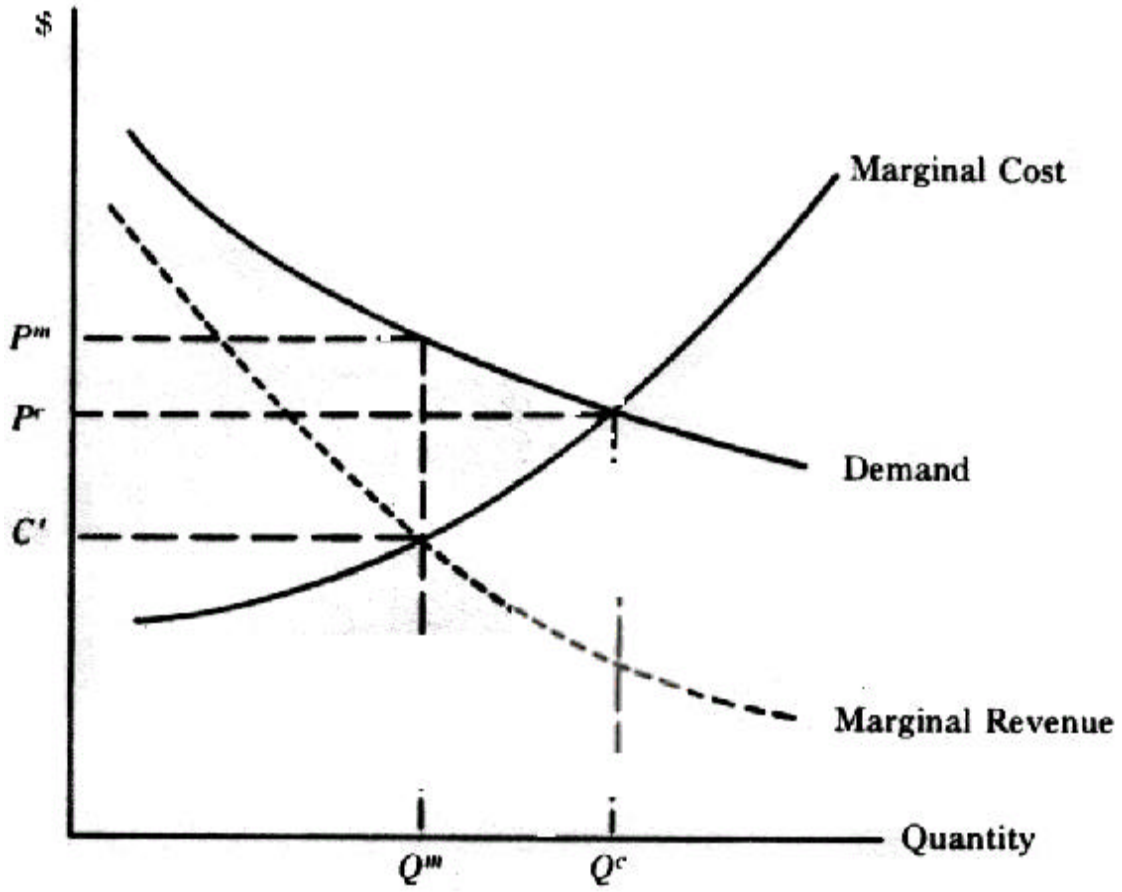


EXHIBIT 3: LANDES AND POSNER ON LERNER INDEX



Monopoly vs. Competitive Pricing

FIGURE 1

EXHIBIT 4: SCARCITY RENTS

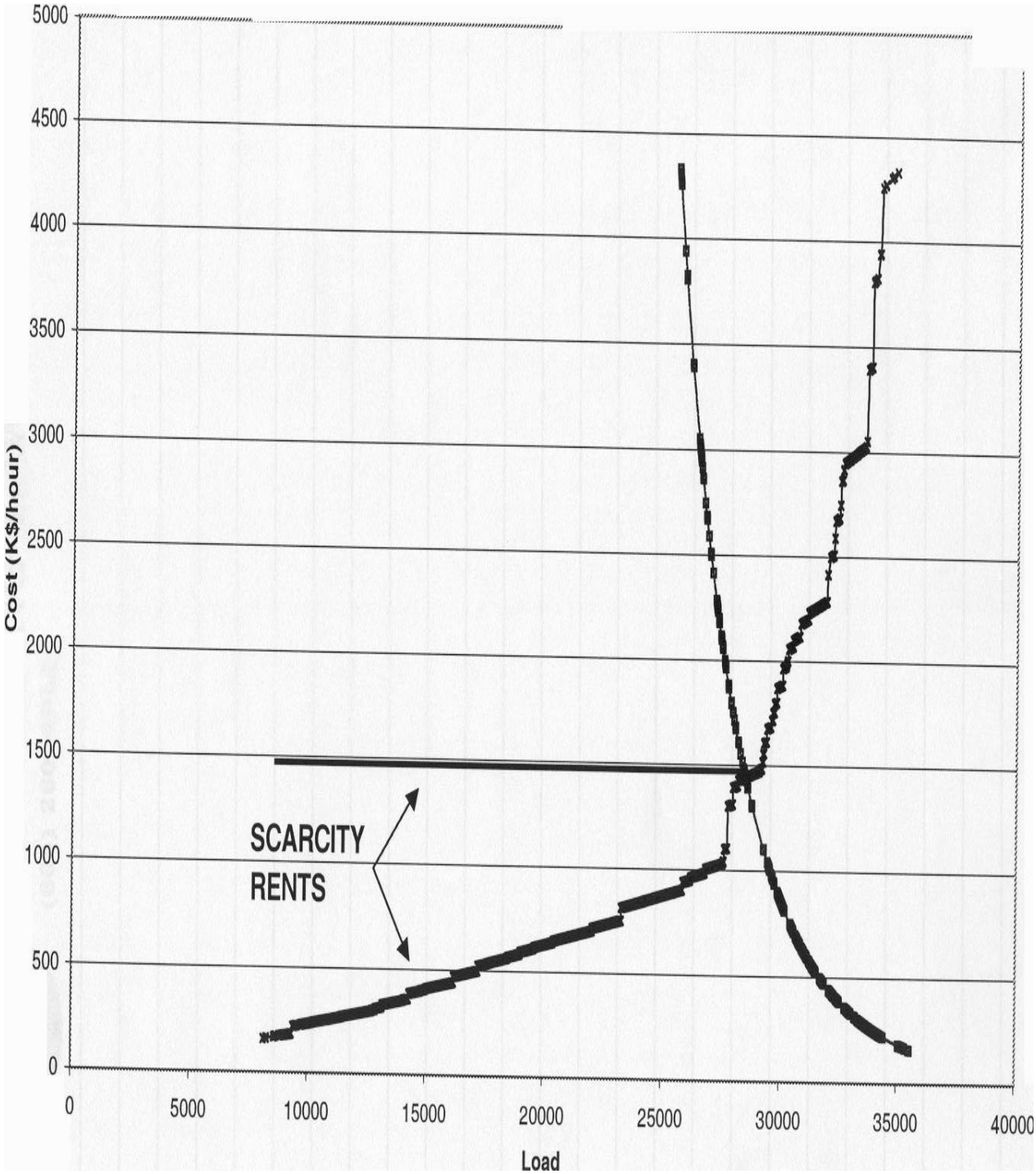


EXHIBIT 5: MARKET POWER INDICATOR CHARACTERISTICS

STATE	CONCENTRATION		ESTIMATED MARK-UP		
	HHI	LEADING FIRM SHARE INDEX	LERNER	MODEL	YEAR
COLORADO	2813	38	52	DOMINANT FIRM	2002
WISCONSIN	2761	47	300+	COURNOT	2000
PENNSYLVANIA	2000	20	9 - 19	COURNOT	1995
PJM	1150	16	29	ACTUAL	
U. K.	1962	31	21	ACTUAL	1994
FLORIDA	1940	38	80	Dominant Firm	1997
			1000+	Cartel	
CALIFORNIA	1537	10	22-29	COURNOT	1998
			30	ACTUAL	2000
NEW ENGLAND			4-11	ACTUAL Market Power Constrained	

SOURCE: Market shares of Generation = Energy Information Administration, *State Electricity Profiles* (U.S. Department of Energy, March 1999); Import capacity for HHI calculation = Cambridge Energy Research Associates (CERA), *Electric Power Trends: 2001* (2000); *High Tension: The Future of Power Transmission in North America* (August 2000) (hereafter, CERA, *High Tension)*; U.S. Census Bureau, *Statistical Abstract of the United States: 2000* (U.S. Department of Commerce), Population growth =Table 20, Cooling degree days and urban population = Table 39, 414: HHI and markups = Wisconsin = Bushnell, James, Christopher Knittel and Frank Wolak, *Estimating the Opportunities for Market Power in Deregulated Wisconsin Electricity Market* (Consumers First, ND); Colorado = Sweetser, Al, *An Empirical Analysis of a Dominant Firm's Market Power in a Restructured Electricity Market: A Case Study of Colorado* (April 1, 1998); Pennsylvania = Rudkevich, Alesandr, Max Duckworth, and Richard Rosen, "Modeling Electricity Pricing in a Deregulated Generation Industry: The Potential for Oligopoly Pricing in a Poolco," *The Energy Journal*, 1998 (19); PJM = .Mansur, Erin, T., *Pricing Behavior in the Initial Summer of the Restructured PJM Wholesale Electricity Market* (University of California Energy Institute, Program on Workable Energy Regulation, April 2001; UK = Wolak, Frank A. and Robert H. Patrick, *Impact of Market Rules and Market Structure on the Price Determination Process in the England and Wales Electricity Market* (POWER, February 1997), Wolfram, Catherine, "Measuring Duopoly Power in the British Spot Market," *American Economic Review*, 89: 1999, p. 812; California =.Hildebrandt, Eric, *Impacts of Market Power in California's Wholesale Energy Market: More Detailed Analysis Based on Individual Seller Schedules and Transactions in the ISO and PX Markets* (Department of Market Analysis, California Independent System Operator, April 9, 2001), Klein, Michael and Loretta Lynch, *California's Electricity Options and Challenges* (August, 2000).

EXHIBIT 6: STRATEGIC BIDDING IN CALIFORNIA, 1998-1999

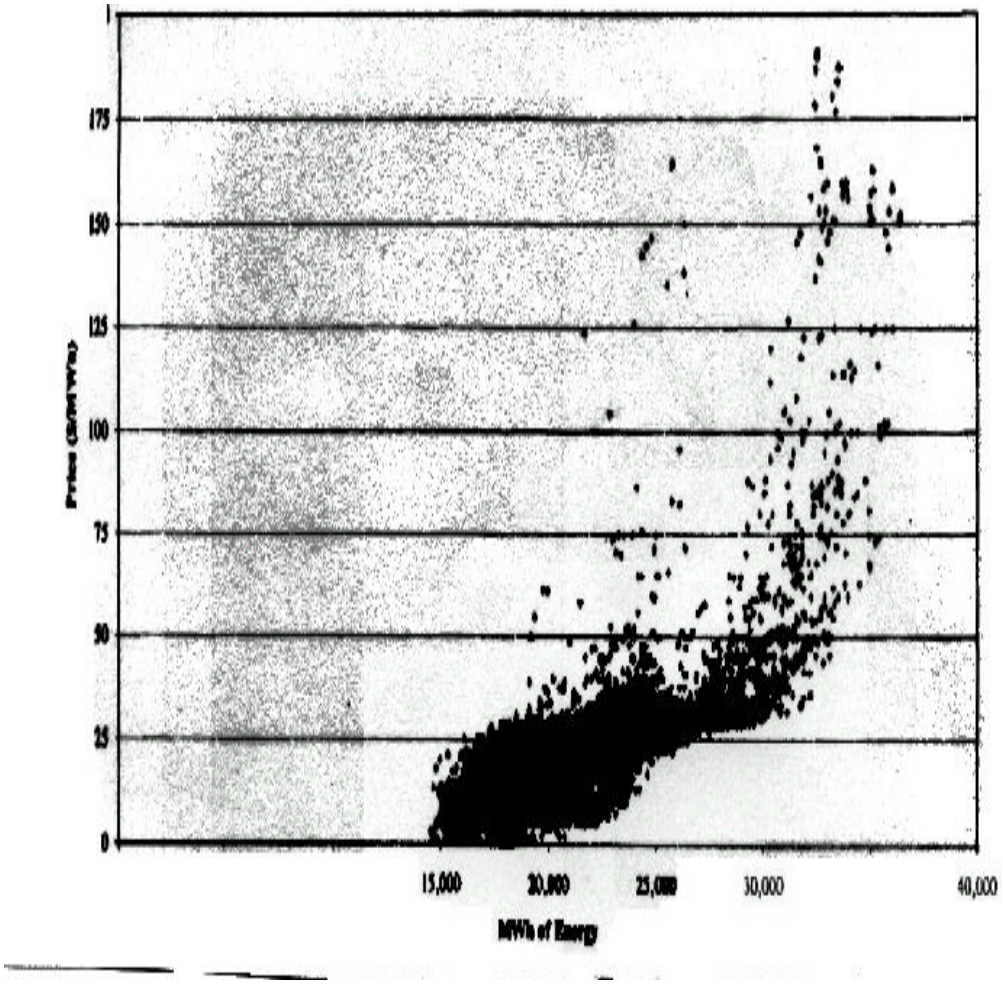


EXHIBIT 7: COMPARISON OF 1999 AND 2000 CALIFORNIA PRICES

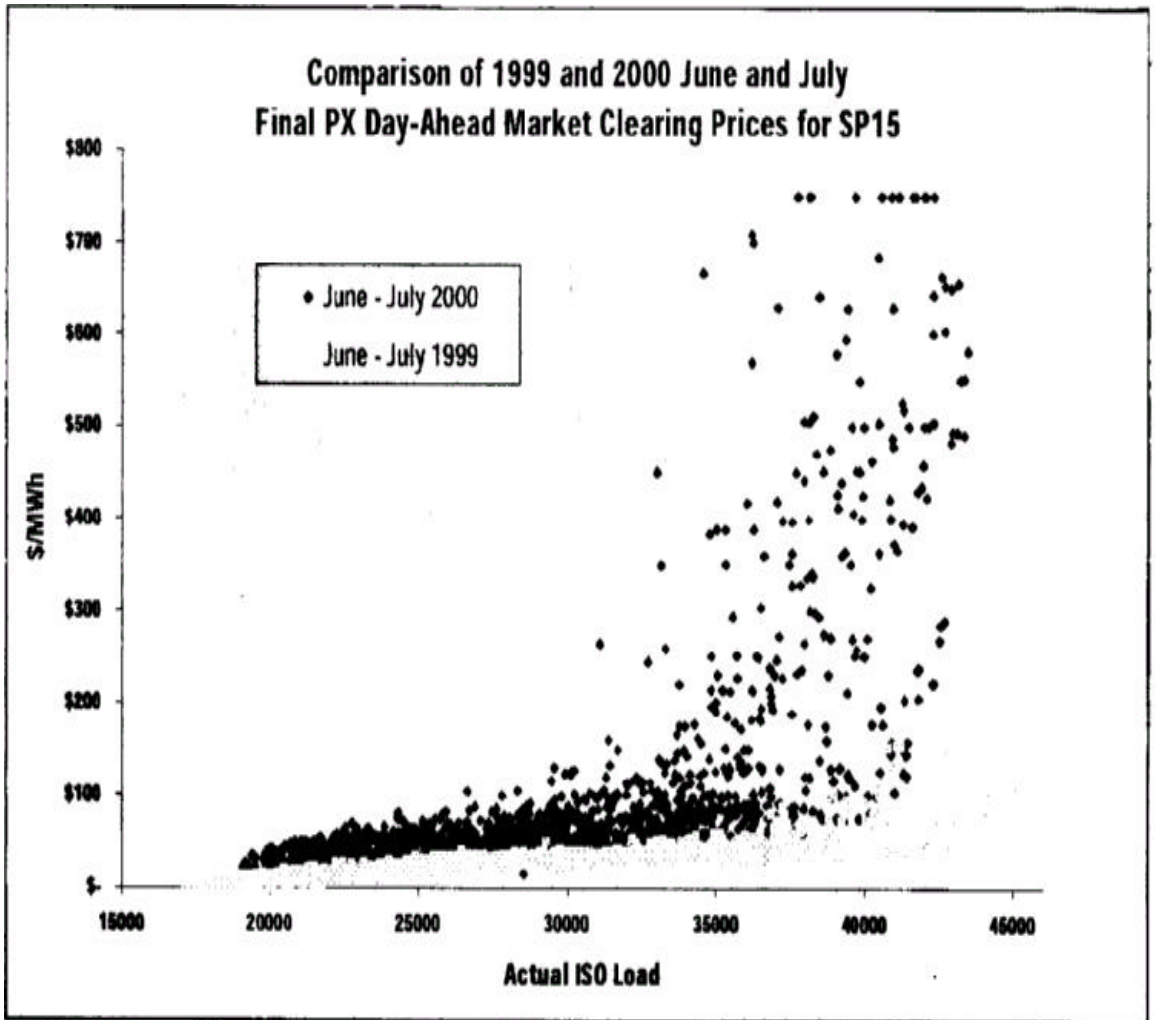


EXHIBIT 8: STRATEGIC BIDDING AT MODERATE LEVELS OF DEMAND IN THE UK, 1993

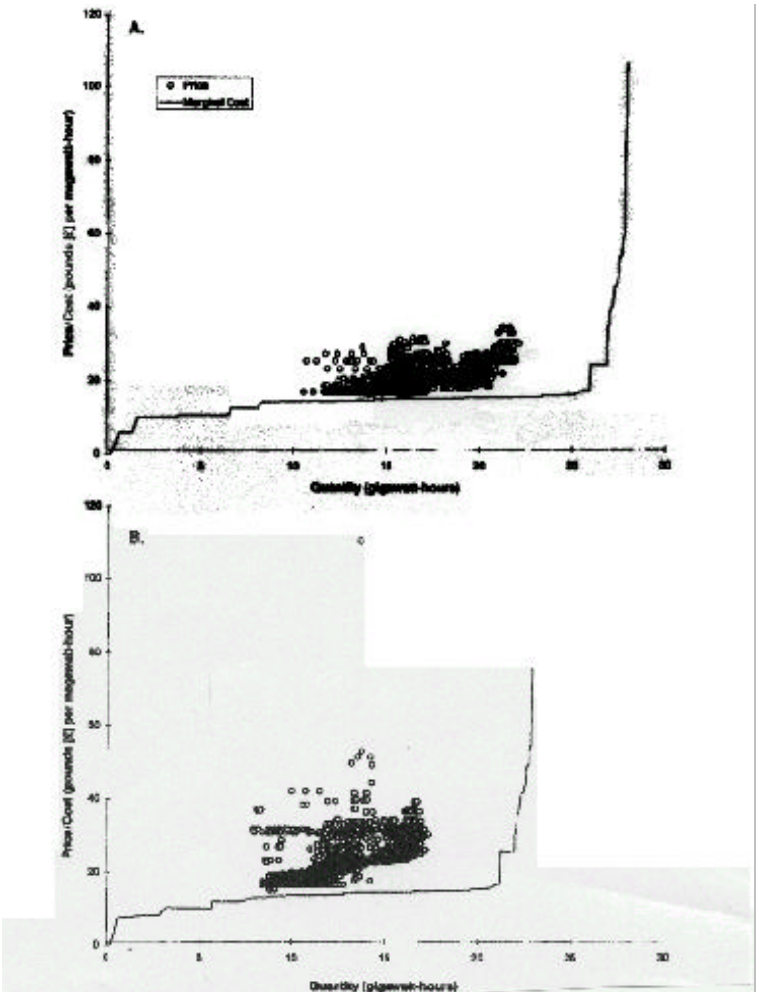
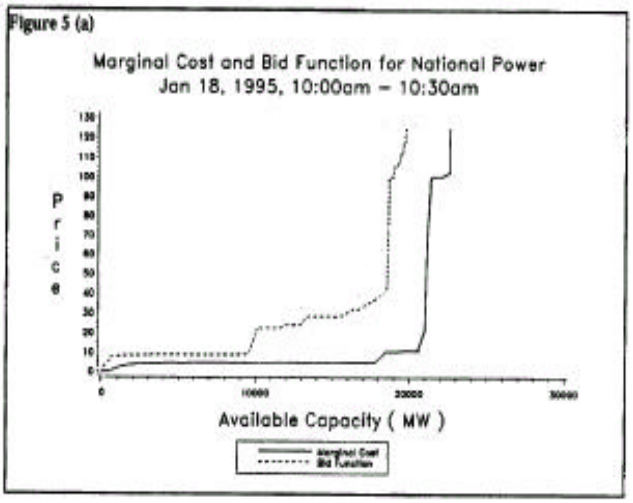
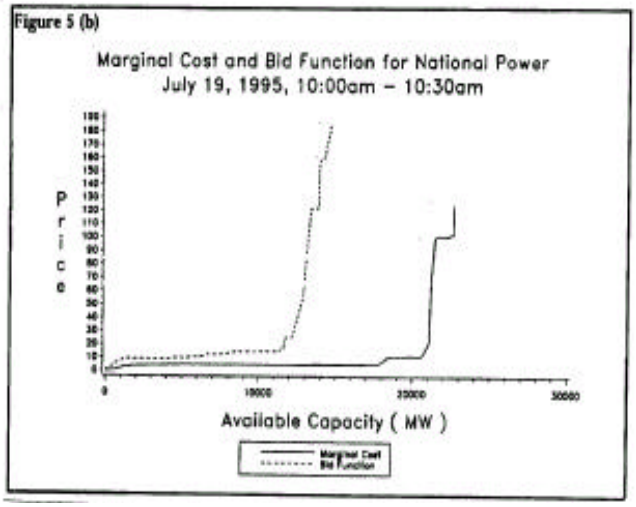


EXHIBIT 9: STRATEGIC BIDDING IN THE UK 1995





ATTACHMENT A: FEDERAL ACTIVITIES OF THE CONSUMER FEDERATION OF AMERICA IN ELECTRICITY AND NATURAL GAS ISSUES

"Statement Of Dr. Mark Cooper on Electricity Markets: California," Subcommittee On Energy And Air Quality House Energy And Commerce Committee's Subcommittee, March 22, 2001

"Consumer Federation Of America, Request For Reconsideration Regional Transmission Organizations," Federal Energy Regulatory Commission, Docket No. RM99-2-000; Order No. 2000, January 20, 2000

"Testimony of Dr. Mark N. Cooper on behalf of the Consumer Federation of America and Consumers Union," Electricity Restructuring at the Federal Level, Subcommittee on Energy and Power, U.S. House of Representatives, October 6, 1999

"Testimony of Dr. Mark N. Cooper on Electricity Competition: Consumer Protection Issues," before the Subcommittee on Energy and Power, Energy and Commerce Committee, United States House of Representatives, May 26, 1999

Member, Advisory Committee on Appliance Efficiency Standards, U.S. Department of Energy, 1996 - 1998

"Electric Industry Restructuring: Who Wins? Who Loses? Who Cares?" Hearing on Electric Utility Deregulation, National Association of Attorneys General, November 18, 1997

"Testimony of Dr. Mark N. Cooper on The Regulation of Public Utility Holding Companies," Committee on Banking, Housing, and Urban Affairs, United States Senate, April 29, 1997

"Statement of Dr Mark N. Cooper," Project on Industry Restructuring, Public Utility Commission of Texas, Project No. 15000, May 28, 1996

"Testimony of Dr. Mark N. Cooper on Behalf of the Consumer Federation of America and the Environmental Action Foundation on Exempting Registered Holding Companies from the Public Utility Holding Company Act for Diversification into Telecommunications," Committee on Energy and Commerce, United States House of Representatives, July 29, 1994

"Testimony of Dr. Mark N. Cooper on Regulatory Reform in the Electric Utility Industry," Subcommittee on Energy and Power Energy and Commerce Committee, United States House of Representatives, May 2, 1991

Member, Energy Conservation Advisory Panel, Office of Technology Assessment, 1990-1991

"Testimony of Dr. Mark N. Cooper on Regulatory Reform in the Electric Utility Industry," before the Committee on Energy and Natural Resources, U.S. Senate, March 14, 1991

"Testimony of Mark Cooper and Scott Hempling on Electric Utility Policies of the Federal Energy Regulatory Commission," before the Subcommittee on Environment, Energy and Natural Resources of the Government Operations Committee, U.S. House of Representatives, October 11, 1990

Member, Increased Competition in the Electric Power Industry Advisory Panel, Office of Technology Assessment, 1989

"Testimony of Dr. Mark N. Cooper on Independent Power Producers and the Public Utility Holding Company Act of 1935" Subcommittee on Energy and Power, Committee on Energy and Commerce, United States House of Representatives, September 14, 1989

"Joint Testimony of the Consumer Federation of American and the Citizen Labor Energy Coalition on Bypass of Natural Gas Local Distribution Companies," before the Subcommittee on Energy Regulation and Conservation, Committee, on Energy and Natural Resources, United States House of Representatives, September 29, 1988

"Independent Power Producers and the Public Utility Holding Company Act of 1935, Subcommittee on Energy and Power of the Energy and Commerce Committee, U.S. House of Representatives, September 14, 1988

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