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ELECTRIC UTILITY RATE REGULATION: CURING ECONOMIC SHORTCOMINGS THROUGH COMPETITION*

William J. Collins**

Drawing on recent empirical studies, Mr. Collins concludes that the present day electric utility industry does not possess natural monopoly characteristics. Thus, the primary justification for governmental regulation of utilities no longer exists. The author contends that both the electric utility industry and consumers would benefit from increased competition and coordination. The article points out the potential for, and hindrances to, increased competition. To achieve reliability and efficiency in the electric utility industry, the author proposes that utilities be forced to interconnect and "wheel" power. The author also recommends a decrease in territorial restrictions and an increase in antitrust enforcement to promote competition and coordination. To induce competition, Mr. Collins advocates that regulatory agencies allow greater profits to more competitive utilities. According to Mr. Collins, the best form of regulation in the electric utility industry is coordination and competition.

* Winner of the Seventh Annual National Energy Law and Policy Institute Essay Competition.

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I. INTRODUCTION

Regulation of the electric utility industry has been largely unquestioned in the seventy-five years since the first public service commissions were formed at the state level.[1] Technological improvements combined with what were perceived to be inherent economies of scale within the industry resulted in declining unit costs and stable electricity rates.[2] Under these conditions little conflict arose among customers, regulators and the industry. Regulation became increasingly passive and insulated electric utilities from competitive pressure. In fact, one public utility commissioner characterized regulation in the 1960's as non-existent, since planning and pricing decisions were largely made by the industry.[3]

In recent years, the electric utility industry has faced a number of complex and interrelated problems. These include dramatic rises in the cost of fuel and the cost of capital, a decline in the efficiency and reliability of electric power production and exhaustion of the economies of scale associated with larger generating plants.[4] In response, state utility commissions have increased the price of electricity while continuing to approve inefficient and often discriminatory pricing schedules, and have put a ceiling on allowed returns on equity[5] that forces utilities to raise needed capital by issuing stock at below average book value. In addition, electric utility bond ratings have declined under a growing perception that electric utilities are risky enterprises, thus raising the cost of debt.[6] If the industry cannot attract sufficient capital, power shortages may occur by the late 1980's.[7] As a result, dissatisfaction with the results of economic regulation has grown among diverse

1. D. ANDERSON, REGULATORY POLITICS AND ELECTRIC UTILITIES 33-56 (1981).

2. *Id.* at 68-69.

3. *Id.* at 69-70. In 1965 two formal rate of return reviews were processed by state regulatory commissions. In 1975 114 such reviews were processed. *Id.* Paul Joskow has characterized regulation by state commissions as "regulation by benign neglect." Joskow, *Electric Utility Rate Structure in the United States: Some Recent Developments*, in PUBLIC UTILITY RATE MAKING IN AN ENERGY-CONSCIOUS ENVIRONMENT 2 (W. Sichel ed. 1979).

4. H.R. REP. No. 496 (Pt. IV), 95th Cong., 2d Sess. 129, *reprinted in* 1978 U.S. CODE CONG. & AD. NEWS 8454, 8572; A. CANON & P. MACAVOY, THE DECLINE OF SERVICE IN THE REGULATED INDUSTRIES 39-40 (1981).

5. *Cf.* Corrigan, *Utilities Paying Price for Counting on Demand Growth That Never Came*, 13 NAT'L J. 1848 (1981). From 1975-1980, the rate of return on average common equity held steady at 11.7%.

6. *Id.* From 1975-1980, the average yield on bonds grew from 9% to 13%. This rise may in part be attributable to inflation.

7. A. CANON & P. MACAVOY, *supra* note 4, at 67-68. *See also* Berry, *The Case for Competition in the Electric Utility Industry*, PUB. UTIL. FORT., Sept. 13, 1982, at 13; U.S. DEP'T OF ENERGY, THE FUTURE OF ELECTRIC POWER IN AMERICA: ECONOMIC SUPPLY FOR ECONOMIC

groups. Moreover, recent empirical studies have questioned the reason for regulating some services of the electric utility industry in the absence of natural monopoly characteristics.[8] Other studies have outlined such potential benefits to be derived from an interplay of competition and coordination among electric utility firms as efficiency, innovation and exploitation of economies of scale.[9]

The remainder of this article is divided into four sections. Section II briefly describes the process and objectives of rate regulation and examines the effectiveness of regulation in controlling monopoly profits and devising an equitable and efficient rate structure. Section III examines the natural monopoly rationale for regulating the electric utility industry in light of recent empirical studies. Section IV suggests that both coordination and competition among electric utilities are needed. The structure of the industry and possible competitive markets for electricity are described and the extent to which competition and coordination can coexist within the industry is investigated. Various hindrances to competition and coordination, as well as the federal response to such hindrances, are considered. Section V examines recent proposals to restructure and deregulate certain services of the electric utility industry in order to create a more efficient and competitive industry, and presents a less radical and disruptive proposal for competition among electric utilities within a regulatory context. Section V also explores some likely effects of increased competition within the electric utility industry.

In brief, this article finds that the present regulatory scheme harms the electric utility industry and its customers, and that the traditional justification for regulation may no longer be valid. The electric utility industry can attain greater efficiency and reliability through competition among utilities than through government regulation.

II. RATE REGULATION

A. *The Regulatory Process*

Utility commissions determine the revenue needs of an electric utility in a rate hearing. Typically, a test year is selected from the recent past and the utility is asked to submit its expenses from that year.

GROWTH ES-9 (DOE/PE-0045 1983). *But see* Foley, *Electric Utility Financing-Let's Ease off the Panic Button*, PUB. UTIL. FORT., Jan. 6, 1983, at 21.

8. *See infra* notes 81-119 and accompanying text.

9. *See infra* notes 127-31 and accompanying text.

The regulatory commission reviews the expenses and may disallow any items it deems improper. The revenue allowance also includes a fair return to stockholders and bondholders who have provided the capital necessary for financing the utility.[10] The utility then files a rate schedule for the various classes of customers designed to enable it to cover its cost of service and allowed return. A year may elapse between hearings due to the complicated nature of the proceedings. This is commonly referred to as regulatory lag.[11]

Until recently, utilities have been allowed broad discretion to adopt a rate structure that maximizes profits. Most commissions, however, do have the authority to disallow specific rates if they are unjust, unreasonable, or unjustly discriminatory.[12] If a competitor or customer of an electric utility complains that a specific rate is either too low or too high, a commission can hold hearings and order the utility to revise its rate structure. Most commissions also have authority to impose rate structures upon utilities.[13]

In addition, commissions can regulate which territories a utility can serve by prohibiting the initiation, extension or abandonment of service without a certificate of public convenience and necessity. A new utility desiring to enter a market is also subject to this requirement.

The electric utility industry is subject to control by both federal and state agencies. The Federal Energy Regulatory Commission (FERC) has jurisdiction over the interstate transmission and sale of electric energy by privately owned utilities.[14] Regulation by state and

10. The fair return is computed by multiplying the utility's rate base by the fair rate of return. The fair rate of return is a composite percentage made up of the interest the utility must pay bondholders and the estimated cost of attracting the necessary equity capital. The rate base is either the depreciated original or the replacement cost of the assets used in providing the service or it is some figure in between called the fair value. Though rate base valuation is the subject of a great deal of litigation, one study concluded, after allowing for jurisdictional variation, that whether original cost, fair value, or replacement cost was selected as the method for calculating the rate base, there was no substantial difference in the earnings of regulated firms. Primeaux, *Rate Base Methods and Realized Rates of Return*, 16 ECON. INQUIRY 95, 104-05 (1978). *But see* Petersen, *The Effect of "Fair Value" Rate Base Valuation in Electric Utility Regulation*, 31 J. FIN. 1487, 1490 (1976) ("[f]irms operating in fair value jurisdictions, on average, are allowed and earn higher profit rates than those firms regulated by commissions who adhere to the original cost concept.")

11. U.S. DEP'T OF ENERGY, STATE REGULATION OF ELECTRIC AND GAS UTILITIES 39 (DOE/EIA-0201/4) (1980).

12. 1 A. KAHN, THE ECONOMICS OF REGULATION 40-45 (1970).

13. Lifeline rates are an example of a rate structure imposed by commissions. *See infra* notes 70-71 and accompanying text.

14. 16 U.S.C. § 824(b)(1) (1982). The interstate wholesale power market over which FERC has jurisdiction comprises about 10% of the total power sales. Corrigan, *supra* note 5, at 1850. FERC also regulates the rates of federally produced electrical power. This market comprises

local bodies varies, though almost all states exercise control over retail rates, thus controlling the profitability of privately owned utilities.[15]

B. *Objectives of Regulation*

The traditional reason for regulating electric utilities is that they are natural monopolies.[16] A natural monopoly exists where unit costs tend to decline as output is concentrated in a single supplier.[17] Under such circumstances a monopoly is inevitable because it is the cheapest way to organize the industry, since one firm can supply the entire required output at a lower cost than could two or more firms. If the electric utility industry is a declining cost industry, it would be reasonable both to grant one utility an exclusive franchise to insure the most efficient allocation of resources and to place the utility under rate regulation to prevent exploitation by the monopoly. The exclusive franchise would permit economies of scale which could not be realized by several smaller firms. In addition, since the unregulated monopolist will attempt to maximize profits by producing at the level where marginal revenue equals marginal cost, the firm will reap excessive profits while some consumer demand at the level of long run average costs will not be satisfied.[18] This results in a misallocation of resources to other industries and a loss of consumer surplus to society.[19] To eliminate

about 3.5% of all power sales. Pace & Landon, *Introducing Competition into the Electric Utility Industry: An Economic Appraisal*, 3 ENERGY L.J. 10, 12 (1982). FERC became a regulatory agency on October 1, 1977, when the Commission functions of the Federal Power Commission (FPC) were transferred to FERC pursuant to § 402 of the Department of Energy Organization Act, 42 U.S.C. § 7172(a) (1982). In this article "FERC" will be used in reference to periods after October 1, 1977, and "FPC" will be used in reference to periods prior to October 1, 1977.

15. *See* Meeks, *Concentration in the Electric Power Industry: The Impact of Antitrust Policy*, 72 COLUM. L. REV. 64, 66 n.8 (1972) for a detailed list of jurisdictional authorities. Sixteen state commissions have been authorized to control the rates of local publicly owned systems. Pace & Landon, *supra* note 14, at 11.

16. 2 A. KAHN, *supra* note 12, at 117-19.

17. *Id.* at 119; *see also* P. LEBEL, ENERGY ECONOMICS AND TECHNOLOGY 354 (1982) (natural monopoly exists where declining average costs are found over the dominant, if not exclusive, range of production).

18. Marginal revenue is the additional revenue obtained by a firm when it sells one more unit of output. Marginal cost is the additional cost of producing one more unit of output. W. NICHOLSON, INTERMEDIATE MICROECONOMICS AND ITS APPLICATION 605 (1979). Average costs are the total costs incurred by a firm divided by the total output produced. *Id.* at 183. Long run refers to the period of time in which all inputs can be varied by the producer and is conceptually distinct from the short run, which refers to the shorter period of time in which some inputs are regarded as being fixed. *Id.* at 606.

19. Consumer surplus is the difference between what an individual actually pays and what the individual would be willing to pay for the service. Most firms treat all buyers as a group and will in any period sell their output at a single price to this group. Most firms are unable to charge the maximum amount each individual will pay for their output. It is the marginal buyer who

these distortions the electric utility is required to make service available to everyone in its service area to the extent demanded by the consumers at a "fair and reasonable" price.

The first objective of regulation is to control monopoly profits and thereby encourage efficiency and large scale production, deterring entry into the industry. Utility commissions also directly control entry by granting franchises. Entry restrictions justify government control of the price structure a firm adopts to meet its revenue requirements. In the absence of entry restrictions, a firm faced with a new entrant will lower rates in the competitive portion of its market while raising rates in the monopolistic portion of its market in order to recoup its revenue needs. In the absence of new market entrants, there is less reason for the utility to discriminate among customers. Rather, entry restrictions allow regulators a voice in determining which customers to favor.[20]

This leads to the second objective of regulation—an efficient and equitable price structure that prevents excessive price discrimination across and within customer classes. In a declining cost industry, the marginal cost of producing a unit of output is below average cost. Marginal cost is generally considered to be the place at which prices are to be set in order to give correct signals to society and thereby encourage an efficient allocation of resources.[21] If utility rates were set at marginal cost, however, the firm's total revenue would be less than its total cost. If rates were set at average cost, the marginal purchaser, confronted with a false alternative, might switch to a less efficient (higher marginal cost) substitute. The gap between marginal cost and

determines the price. Other buyers who would have been willing to pay more receive a "bonus" called consumer surplus. A monopolist is able to reduce output and raise the price, transferring some portion of consumer surplus into monopoly profits. In addition, a monopoly price creates a net loss to society (as contrasted with a transfer of resources from consumers to monopolist) called a deadweight loss. *Id.* at 318. *See also* P. LEBEL, *supra* note 17, at 409.

20. A recent empirical study comparing the rate structures of regulated and unregulated municipal utilities in 1972 found much greater price discrimination in state regulated municipal utilities than in unregulated municipal utilities. As between industrial, commercial and residential users of electricity, state regulators favored industrial customers the most, followed by commercial customers. Residential customers suffered. Hollas & Friedland, *Price Discrimination in the Municipal Electric Industry*, in 2 RESEARCH IN LAW AND ECONOMICS 181, 192-94 (R. Zerbe ed. 1980). *See infra* notes 60-61 and accompanying text.

21. Incremental cost is often used as a rough approximation of marginal cost, since the capital cost of new capacity is averaged over all its users rather than being charged completely to the marginal user. *See* 1 A. KAHN, *supra* note 12, at 75-77. New capacity becomes necessary when the utility is operating at peak capacity and there is an unmet demand for service. Because of averaging, incremental pricing may not necessarily generate sufficient revenues to cover all capital costs if customer demand is less than all the new capacity. Newburger, *Reforming Electric Utility Rate Regulation Reform: Peak-Load Prices Without Long-Run Incremental Cost Analysis*, 28 CASE W. RES. L. REV. 556, 573-74 (1978).

average cost for a declining cost firm is roughly equal to the firm's fixed costs,[22] and so any price set equal to or above marginal cost contributes to the fixed costs of providing the service. Utilities are allowed to apportion to different classes of customers different fixed or capacity costs of service based on the customers' willingness to pay. Regulation assures that utility customers pay only their fair share of fixed costs.

The third objective of regulation is to assure an adequate level of service on a continuing basis to all classes of users.[23] In the absence of regulation some demand might not be served and regional planning might not be sufficient to assure adequate service. The paternalistic thinking behind this objective is clear.[24]

C. *Effectiveness of Regulation*

1. Price Level

How effective is the regulatory scheme in meeting the objectives discussed above? Professors Stigler and Friedland found that between 1912 and 1937 regulation was largely ineffective in influencing electric rates, rate discrimination, and returns to investors.[25] A comparison was made between those states which regulated electric utilities and those which did not. Average rate levels were the same in regulated and unregulated states. The ratio of monthly residential bills for large amounts of electricity relative to small amounts of electricity was also the same, whereas it had been assumed that regulatory commissions would grant lower rates to small residential consumers. In addition, the ratio of domestic rates to industrial rates was the same in regulated and unregulated states, although it had been assumed that commissions would reduce residential rates relative to industrial rates in order to reduce discrimination. Returns to investors were also the same between regulated and unregulated states.

Stigler and Friedland concluded that a regulatory commission is

22. Fixed costs, such as capital or capacity costs, are costs that do not change as the level of output changes in the short run. W. NICHOLSON, *supra* note 18, at 604. Technically the gap between marginal cost and average cost is only equal to fixed costs in the short run when marginal cost equals average variable cost. Variable costs are those costs such as fuel costs that change in response to changes in the level of output being produced by a firm. *Id.* at 606.

23. EDISON ELECTRIC INSTITUTE, DEREGULATION OF ELECTRIC UTILITIES: A SURVEY OF MAJOR CONCEPTS AND ISSUES 5 (1981).

24. An argument can be made that external planning of electric utilities is no more needed than provisions for grocery stores or other necessities.

25. Stigler & Friedland, *What Can Regulators Regulate? The Case of Electricity*, 5 J. LAW & ECON. 1 (1962).

incapable of forcing a utility to operate at a specified combination of output, price and cost. If rates (prices) are set at average cost at some output beyond the profit maximizing one, then the utility could reduce costs, thus increasing profits, by reducing the quality of its service (output) in such areas as "peak load capacity, constancy of current, promptness of repairs [or] speed of installation of service."[26] As an alternative, monopoly profits could be concealed through highly sophisticated accounting procedures requiring great expertise to detect, and calling for close judgement calls by regulators. Decisions about which assets to include in the rate base, the valuation of those assets, depreciation allowances or the separation of costs between different regulatory jurisdictions (some of which may be less vigilant) are business judgements liable to be resolved in favor of the utility. Furthermore, the determination of a fair rate of return on the rate base depends on comparisons with other firms and industries. Such comparisons are circular when other regulated firms serve as a benchmark and misleading when nonmonopolists engaged in dissimilar businesses serve as a benchmark.

In another study, Professor Moore has shown that regulation has not reduced private utility residential electricity prices by more than five percent from their profit maximizing position.[27] In that study the marginal costs of sixty-two private electric companies were computed for the years 1952-1962, and the demand curves facing them were estimated. Marginal revenues were assumed to be equal to marginal costs in arriving at the profit maximizing prices which were then compared to the actual rates charged. Moore concluded that to the extent a utility faced competition from surrounding utilities "any removal of regulation would increase the elasticity of demand above the elasticity for the market and so lead to lower prices."[28]

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26. *Id.* at 11. Load is the amount of electric power required at any specified point or points on a system. The simultaneous needs for electric power of the system's customers determine the load which the system must meet.

27. Moore, *The Effectiveness of Regulation of Electric Utility Prices*, 36 S. ECON. J. 365 (1970). Another study examining profit maximization at the wholesale level concluded that regulated investor-owned utilities buy wholesale electricity at lower rates and sell wholesale power at higher rates than do unregulated government-owned utilities. DeAlessi, *Some Effects of Ownership on the Wholesale Prices of Electric Power*, 13 J. ECON. INQUIRY 526 (1975). *But see* Meyer & Leland, *The Effectiveness of Price Regulation*, 62 REV. ECON. & STAT. 555 (1980) (results display wide variation of effectiveness of regulation but on average prices charged by regulated electric utilities lower than those which maximize profit, though not optimal in the sense of profits plus consumer welfare).

28. Moore, *supra* note 27, at 374. The price elasticity of demand is a measure of the sensitiv-

Even effective regulatory control of profits, however, has an adverse impact on a utility's incentives to operate efficiently. At least theoretically, if a firm's costs increase it can either pass them on to its customers as part of its expenses or it can make up the rise in costs by a suitable increase in rates for its inelastic demand services.[29] (This assumes the demand for some services of an electric utility is inelastic over the relevant output range.)[30] Under such circumstances there is little motivation to keep expenditures down. The major check on this incentive problem is the occurrence of regulatory lag[31]—the delay between the time when a tariff is filed and the time when it is actually permitted—in an inflationary environment. In that situation, electric utilities, faced with rising costs which greatly erode earnings, are forced to be cost efficient during the lag period. Regulatory lag, however, has been reduced significantly by automatic adjustment clauses that pass through costs to consumers without any regulatory hearing.[32] On the other hand, a regulatory commission operates in a political environment, and it may be assumed that in the event technological innovation actually lowers costs, regulatory lag would be shortened to allow a quicker rate reduction. Shortening regulatory lag, however, could thwart the utility's incentive to innovate, since the motivation for a firm to innovate is the unusual but temporary profits that innovation permits.

Professors Averch and Johnson also contend that rate base regulation causes inefficiency.[33] They assert that when the allowed rate of return is greater than the cost of capital, utility firms have an incentive to use more capital than would otherwise be efficient.[34] There are a number of ways this tendency to use more capital may affect the elec-

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ity of an amount of a good demanded to a change in its price and is defined as the percent change in quantity demanded divided by the percent change in its price. P. LEBEL, *supra* note 17, at 526.

29. Baumol, *Reasonable Rules for Rate Regulation: Plausible Policies for an Imperfect World*, in THE CRISIS OF REGULATORY COMMISSIONS 187, 190 (P. MacAvoy ed. 1970).

30. Spann, *Federal Regulation of Electric Utilities Via Taxation and Litigation*, in REGULATORY REFORM 2 (W. Moore ed. 1976) cites evidence of inelastic demand in some markets for electricity.

31. *See* 2 A. KAHN, *supra* note 12, at 48.

32. *See infra* notes 41-46 and accompanying text.

33. Averch & Johnson, *Behavior of the Firm Under Regulatory Constraint*, 52 AM. ECON. REV. 1052 (1962).

34. J. QUIRK, INTERMEDIATE ECONOMICS 262 (1976). The recent rise in the cost of capital may negate this effect temporarily. There is also disagreement among commentators over the validity of the Averch and Johnson hypothesis. *See, e.g.*, S. BREYER & P. MACAVOY, ENERGY REGULATION BY THE FEDERAL POWER COMMISSION 108 (1974); Boyes, *An Empirical Examination of the Averch—Johnson Effect*, 14 ECON. INQUIRY 25 (1976). *See also* U.S. DEPT. OF ENERGY, *supra* note 7, at ES-16 to ES-18.

tric utility industry.[35] First, electric utilities maintain a large amount of capacity in excess of peak requirements and additional capacity adds to a company's rate base. For example, in 1963 electric companies had twenty-five percent more generating capacity than the expected annual peak load. Coordination among companies could have reduced the need for excess capacity, possibly saving as much as two billion dollars.[36] As a result of this bias towards excess capacity, electric firms resist both peak load pricing—which would tend to hold down the expansion of demand for scarce energy resources consumed in electrical production—and coordination or pooling arrangements with neighboring utilities—which would reduce the cost of reserve load capacity. Second, the tendency to use more capital explains the reluctance on the part of electric utilities to lease facilities from others. According to a 1968 *Wall Street Journal* article,[37] electric utilities have been hesitant to lease fuel cores despite "unquestioned advantages." Third, the willingness of utilities to use excess capital may explain their tendency to adhere to excessively high standards of reliability and uninterruptibility of service. While this tendency is hard to demonstrate, it is reasonable to assume that lower overall cost levels could be achieved since utilities sell services of various degrees of interruptibility. Fourth, this willingness may also explain a tendency for utilities to bargain less aggressively than they otherwise would for input factors. An example of this tendency was the eagerness of electric utility companies to pay extremely high prices for electric equipment during the electric equipment manufacturers' price conspiracy of the late 1950's. It is significant that the conspiracy was brought to light by the complaints not of a private utility but rather by the Tennessee Valley Authority.[38] A possible fifth effect of the tendency to use inefficient amounts of capital is the willingness of electric utilities to diversify into regulated or unregulated markets. By purchasing input manufacturers and then raising

35. *See* 2 A. KAHN, *supra* note 12, at 50-54.

36. Wein, *Fair Rate of Return and Incentives*, in PERFORMANCE UNDER REGULATION 49 (H. Trebing ed. 1968). *See also* Iowa Public Service Co., 46 Pub. Util. Rep. (PUR) 4th 339, 369 (Iowa State Commerce Comm'n 1982) (reserve margin of as much as 25% held justified without penalty to investors). A Department of Energy study states that reserve margins in the 1980's have been 30-35%. The study asserts, however, that when existing supply is adjusted to eliminate economically obsolete generation, reserves are about 20%. U.S. DEP'T OF ENERGY, *supra* note 7, at ES-8. The study admits that the current excess reserve capacity is not likely to disappear until the end of the decade. *Id.* at ES-26.

37. *Utilities' Embrace of Nuclear Fuel Stalled by its Classification as a Current Asset*, Wall St. J., Nov. 12, 1968, at 4.

38. 2 A. KAHN, *supra* note 12, at 53-54.

prices to itself the utility transfers monopoly profits to the unregulated portion of its industry. One example has been the investment by many electric companies in coal mines. In 1967, coal mines owned by utilities accounted for 4.4% of the total cost of shipments to electric utilities. By 1974, this had increased to 6.3%.[39]

Professor Courville conducted an empirical study to test the validity of the overcapitalization hypothesis in the electric utility industry.[40] His results confirmed the hypothesis and led to a conclusion that in 1962, 436.5 million dollars or twelve percent of total production costs could have been saved by more efficient production of electricity.

The financial pressure placed on electric utilities in recent years by rising fuel and construction costs combined with regulatory lag led regulators to respond by changing the regulatory process. Automatic adjustment clauses appeared.[41] Forty-seven commissions have authority to establish automatic adjustment clauses and thirty commissions have allowed them.[42] The hope was that resulting higher costs to consumers would depress demand, accurately reflect real cost increases so as to better allocate resources, and promote fuel conservation.[43] The actual effect has been to depress demand and create excess capacity, diminish incentives to bargain aggressively for fuel purchases, and to create a bias in favor of inputs which are includable in adjustment clauses.[44] One utility paid five million dollars more for coal in 1977 than it would

39. This reflection of the Averch—Johnson effect was noted in U.S. DEP'T OF ENERGY, STATE REGULATION OF ELECTRIC AND GAS UTILITIES 36 (DOE/EIA-0201/4) (1980). To the extent that any regulated firm has an incentive to diversify and turn regulated firm costs into profits in its unregulated division, this may not reflect the Averch—Johnson effect.

40. Courville, *Regulation and Efficiency in the Electric Utility Industry*, 5 BELL J. ECON. & MGMT. SCI. 53, 74 (1974). For other confirmations of this effect see Petersen, *An Empirical Test of Regulatory Effects*, 6 BELL J. ECON. 111 (1975); Spann, *Rate of Return Regulation and Efficiency in Production: An Empirical Test of the Averch—Johnson Thesis*, 5 BELL J. ECON. & MGMT. SCI. 38 (1974); Atkinson & Halvorsen, *A Test of Relative and Absolute Price Efficiency in Regulated Utilities*, 62 REV. ECON. & STAT. 81 (1980).

41. Automatic adjustment clauses permit the flow through of selected cost increases without the need for a regulatory proceeding.

42. U.S. DEP'T OF ENERGY, *supra* note 39, at 41.

43. Trebing, *Market Structure and Regulatory Reform in the Electric and Gas Utility Industries* in SALVAGING PUBLIC UTILITY REGULATION 81 (W. Sichel ed. 1976). A 1977-1978 study found that utilities with automatic adjustment clauses pay a higher average price for their fuel inputs than those utilities that did not allow the passing on of fuel price increases. The difference between the prices paid, aggregated over 1977 and 1978, was estimated to be 4.9 billion dollars. However, this amount was partially offset by the benefits accruing from automatic adjustment clauses in resource savings from conserving on rate hearings and in preservation of the utilities' ability to attract capital investment. Kaserman & Tepel, *The Impact of the Automatic Adjustment Clause on Fuel Purchase and Utilization Practices in the U.S. Electric Utility Industry*, 48 S. ECON. J. 687, 688, 696 (1982).

44. Kaserman & Tepel, *supra* note 43, at 687.

have paid at the going market price.[45] As of 1977, only five states conducted audits to verify costs and procurement practices.[46]

Most of the current excess capacity developed after the 1973 oil embargo when automatic adjustment clauses shifted rates up and demand down. Demand had been increasing at a fast rate and utilities, assuming demand would continue to grow at the same rate, invested in more generating plants. In the face of inflation and a high debt cost, utilities are now making a concerted effort to get costs for construction work in progress (CWIP) included in their rate bases to ease the financing of projects begun ten years ago.[47] From 1967 to 1979 cash earnings increased sixty percent in twelve years but construction costs quadrupled. Commissions have directed utilities to capitalize interest expenses on debt incurred for CWIP in a non-cash asset account reflecting capital charges (called Allowance for Funds Used During Construction) to be included in the rate base only after generating plants enter service. This requirement has resulted in cash flow problems for utilities. Utilities as a whole in 1979 had cash earnings of 3.8 billion dollars but paid out 5.6 billion dollars in dividends.[48]

Commissions have also found it necessary to discourage new plant investments. Between 1970 and 1980, commissions denied 11.8 billion dollars or thirty-seven percent of total requests for rate increases (nine billion dollars have been denied since 1976). Two reasons given for these rate relief denials were the failure of utilities to deal with excess reserve capacity and the willingness of electric utility management to sell stock at below book value to finance new plants in the face of such capacity.[49] At issue, then, is whether utilities may charge their customers for power plants that are not yet and may never be in service.[50]

2. Price Structure

Another major problem area in regulation is the determination of an efficient and equitable price structure. Commissions find this area

45. U.S. DEP'T OF ENERGY, *supra* note 39, at 42.

46. *Id.* at 43.

47. *See, e.g.,* Commonwealth Edison Co., 50 Pub. Util. Rep. (PUR) 4th 221 (Ill. Commerce Comm'n 1982) (utility allowed 50% of CWIP in rate base); Houston Lighting and Power Co., 50 Pub. Util. Rep. (PUR) 4th 157 (Tex. Pub. Util. Comm'n 1982) (utility allowed 100% of CWIP in rate base).

48. U.S. DEP'T OF ENERGY, IMPACTS OF FINANCIAL CONSTRAINTS ON THE ELECTRIC UTILITY INDUSTRY A12, A15 (DOE/EIA-0311) (1981).

49. *Id.* at A6, A10-12.

50. Corrigan, *supra* note 5, at 1850.

confusing and often act arbitrarily. Electric utilities have large fixed and joint costs that must be distributed among customers in order for utilities to earn their allowed revenue.[51] While marginal cost pricing is generally believed to maximize efficient resource allocation and protect consumer welfare by sending the right signals to consumers and by supplying additional output to marginal consumers, if a utility priced all of its output at marginal cost, it would not recover for its full costs.

Economic theory requires that assumptions be made about interpersonal utility comparisons in distributing fixed costs. Professor Kahn asserts that "if we assume equal marginal utilities of income, efficiency requires that fixed costs be borne by the users with the least elastic demand."[52] In his view some price discrimination is justifiable as long as rates do not fall below long run marginal costs. This is an example of a demand-based rate structure, since price is based on customer demand.

Professor Baumol advocates that all utility prices be proportional to marginal costs.[53] This would eliminate discrimination and the consumer would receive the correct price (cost) signals; it would not, however, lead to an efficient allocation of resources (as, for example, where electricity serves both as a consumer's good and as an input to another process).[54] Baumol concedes that the prices of some elastic demand services would have to be lowered slightly for the firm to acquire the allowed revenue. In addition, marginal cost would be very difficult to calculate since there is an inherent circularity: the choice of rates affects the quantities purchased which, in turn, affect marginal cost. Baumol's proposal is an example of a cost-based rate structure since the firm's costs serve as a benchmark for price.

Historically, rate structures have been demand-based.[55] Electric

51. This discussion assumes, as has been true historically, that average costs exceed marginal costs. Recent evidence, however, suggests that this is no longer the case. *See infra* notes 72-74 and accompanying text.

52. Kahn, *Inducements to Superior Performance—Price*, in PERFORMANCE UNDER REGULATION 97 (H. Trebing ed. 1968).

53. Baumol, *supra* note 29, at 202.

54. *Id.* at 202 n.12.

55. There are generally three cost classifications within any demand-based rate structure: customer-related, energy-related and demand-related. Customer-related costs vary with the number of customers served. These small fixed user fees composed of the costs of distribution include metering, billing, and accounting. Energy-related costs, primarily fuel costs, vary with the amount of electricity produced and decline as consumption increases. Demand-related costs are the fixed costs of doing business, such as the costs associated with plant and equipment. Demand-related costs pose the greatest problem in allocation because they are joint in nature and cannot be attributed to any one class of customers. Newburger, *supra* note 21, at 563-64; *see also* Hunting-

utilities have employed declining block tariffs. Under this rate structure, customers pay a fixed user charge and a per-kilowatt hour charge that falls in blocks as consumption increases,[56] encouraging consumption. Greater consumption in turn encouraged the addition of new plant facilities during the growth period of the 1960's, since increased capacity is built to meet a maximum rate of demand during peak hours. In recent years, rising fuel costs have been passed on to consumers, decreasing demand for electricity and creating excess capacity.[57] The decrease in demand may also have reduced power plant efficiency and reliability. Intuition and some evidence suggest that the elasticity of demand for electricity is somewhat higher during off-peak periods than during peak periods, since if prices rise uniformly in all time periods, consumers will cut consumption back most during the off-peak period.[58] The result is that power plants will be utilized less during off-peak periods while continuing to be threatened with overloads in peak periods. Moreover, a rate structure encouraging consumption consumes scarce energy resources and encourages utilities to build excessive capacity at a time when the economies associated with large power plants have been exhausted.[59]

An additional problem with declining block rates is that the average price will vary for customers depending on quantity purchased, creating price discrimination. Utilities argue that large industrial customers should be charged less because they take power at higher voltages with smaller connection costs and on a more predictable basis.[60] Discrimination does not always clash with cost-based pricing, but there is recent evidence confirming the existence of inefficient and unjust discrimination. Professors Primeaux and Nelson found that industrial users did pay lower rates than residential users.[61] But given the higher elasticity of demand of industrial users, such discrimination may be justifiable. If the inelastic demand residential rate payer did not subsidize the elastic demand industrial rate payer who purchases at marginal cost, idle capacity would be greater because the industrial customer

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ton, *The Rapid Emergence of Marginal Cost Pricing in the Regulation of Electric Utility Rate Structures*, 55 B.U.L. REV. 689, 709-10 (1975); Comment, *Reform of Electricity Pricing in the United States*, 25 BUFFALO L. REV. 183, 183 (1975).

56. U.S. DEP'T OF ENERGY, *supra* note 39, at 50.

57. *See supra*, notes 41-43 and accompanying text.

58. Spann, *supra* note 30, at 3.

59. H.R. REP. No. 496, *supra* note 4, at 8572.

60. W. SHEPHERD, THE ECONOMICS OF INDUSTRIAL ORGANIZATION 328 (1979).

61. Primeaux & Nelson, *An Examination of Price Discrimination and Internal Subsidization by Electric Utilities*, 47 S. ECON. J. 84, 96-98 (1980).

would not be induced to take the service, and the average unit cost for the residential customer would be even higher. More importantly, however, the study found discrimination between large and small volume users within the same customer class. Rates were priced below long run marginal cost in the last user block of each consumer. Primeaux and Nelson concluded that marginal prices should be raised in each block to long run marginal cost in order to encourage more efficient utilization.[62]

Until recently commissions left the determination of rate structures to utilities.[63] But along with the scarcity of fuel, increased power failures and consumer resistance to higher prices has come an increased public interest in rate formation. The Public Utilities Regulatory Policies Act of 1978 (PURPA) was enacted by Congress in response to these problems.[64] Title I of PURPA requires each state regulatory authority and nonregulated municipal utility to consider within two years certain federally recommended standards and to determine within three years whether or not to implement those standards. The standards include rate structures reflecting the actual costs of service, peak-load pricing such as time of day and seasonal rates, prohibition of declining block rates that do not reflect costs, and restrictions on the use of automatic adjustment clauses. The state commissions are free to implement the standards or reject them. Title I has as its goal the implementation of a peak-load pricing policy. Even without the prodding of the federal government, a few states were already considering adopting some form of peak-load pricing.[65]

The usual rationale for peak-load pricing is relatively simple. Generating plants are built to meet peak demands. Those who use power during peak periods should pay a higher price reflecting the additional capacity needed to meet their demand. The off-peak users should pay only the marginal cost attributable to their use, since they were not responsible for the additional capacity. This makes peak-load pricing a cost-based concept.[66] To the extent that electric utilities have many plants with different variable costs, some of which are used only at peak times, this reasoning is correct. Power plants with higher varia-

62. *Id.*

63. *See* D. ANDERSON, *supra* note 1, at 65.

64. Public Utilities Regulatory Policies Act of 1978, Pub. L. No. 95-617, 92 Stat. 3117 (codified at 16 U.S.C. §§ 2601-45 (1982)).

65. CONGRESSIONAL RESEARCH SERVICE, 95TH CONG., 1ST SESS., THE ELECTRIC UTILITY SECTOR: CONCEPTS, PRACTICES, AND PROBLEMS 30-31 (1977).

66. *See* 1 A. KAHN, *supra* note 12, at 95-103.

ble costs would be used only at peak times or would be used more intensely at peak times. Under such circumstances, true marginal costs would be attributable to peak-load service. In practice, however, once a power plant is in place and the same capacity serves all customers, the capacity costs of such a facility cannot really be attributed to either peak or non-peak users. Professor Morgan has argued that peak pricing would be better viewed as demand-based pricing.[67] Only by aggregating the demand functions of both peak and non-peak users can the optimal plant size be obtained. If no fixed costs are placed on the non-peak user, his demand may exceed capacity. If the non-peak user pays a part of the capacity charge while the peak user continues to pay the full charge, however, the utility reaps a windfall.

This is not to say that peak users should not pay a higher rate than non-peak users. While peak-load pricing is not necessarily synonomous with marginal cost pricing,[68] a price differential between peak and non-peak consumers is efficient. It encourages an optimal use of scarce energy resources and leads to an overall lower average price for electricity. If peak capacity is priced higher than non-peak capacity, capacity requirements would be lower, which would lead to a lower overall average cost to the utility.[69]

Title I of PURPA, as a concession to low income residential consumers, also endorses lifeline rates.[70] Lifeline rates represent a departure from optimum allocative cost-based pricing and may contradict one of the purposes of peak pricing: to level demand. A lifeline rate is a charge, normally below marginal cost, placed on a low consumption of electricity. It involves cross-subsidization between classes of customers and has all the defects of an in-kind subsidy.[71]

The above discussion assumes that average costs exceed marginal

67. T. MORGAN, ECONOMIC REGULATION OF BUSINESS 397-99 (1976).

68. Peak-loading pricing of electricity means selling electricity under a rate structure that reflects the *pattern* of variation in marginal costs. . . .

. . . .

Marginal-cost pricing in its purest form would set the price of each unit of electricity at exactly the incremental cost of its supply at every moment; electricity prices would therefore reflect the *level* as well as the pattern of marginal costs. . . .

This "pure" marginal-cost pricing scheme would require that prices vary almost hourly and also differ among many groups of customers.

B. MITCHELL, W. MANNING & J. ACTON, PEAK-LOAD PRICING 18 (1978).

69. Spann, *supra* note 30, at 3.

70. 16 U.S.C. § 2624 (1982).

71. An in-kind subsidy is a subsidy linked to a particular good (in this case electricity) rather than cash. There is evidence that such subsidies distort consumption patterns by inducing an overconsumption of the subsidized good and an underconsumption of other goods. See E. BROWNING & J. BROWNING, PUBLIC FINANCE AND THE PRICE SYSTEM 100-03 (1979).

costs within the electric utility industry. In recent years, however, marginal costs have exceeded average costs.[72] It is important that regulators structure rates in light of these altered cost conditions. Pricing at marginal cost is still proper if modified by the inverse elasticity rule.[73] Inverse elasticity means that in the elastic demand portions of the electricity market (industrial users) rates should be set at marginal cost in order to provide the proper price signal. In the inelastic portions of the market (residential users), rates should be lowered in order to keep revenues at the proper level.[74] Under present cost conditions the residential customer would benefit from inverse elasticity pricing. A recent court decision has upheld such a pricing policy against an attack that it was discriminatory and sent the wrong price signals to many customers.[75] The inverse elasticity concept has not received wide recognition among state commissions.[76]

The enactment of title I of PURPA has engendered opposition from various factions. States have been reluctant to yield their control over electric power production and have felt that a rate structure change would jeopardize their economic bases.[77] Utilities have been reluctant to embrace rate reform because of a perception that it might affect their ability to compete for customers.[78] The U.S. Supreme Court recently overruled a federal district court and upheld the constitutionality of PURPA in a 5-4 decision.[79] The Court held that since Congress, under the commerce clause, can pre-empt the states com-

72. *See* R. GORDON, REFORMING THE REGULATION OF ELECTRIC UTILITIES (1982); Krohm, *Growth and the Cost of Electric Power*, PUB. UTIL. FORT., Dec. 18, 1980, at 32.

73. CONGRESSIONAL RESEARCH SERVICE, *supra* note 65, at 29; *see* 1 A. KAHN, *supra* note 12, at 144; Huntington, *supra* note 55, at 743-45; Newburger, *supra* note 21, at 583.

74. CONGRESSIONAL RESEARCH SERVICE, *supra* note 65, at 29. The chief advantage of inverse elasticity in modifying marginal cost rates to produce average cost revenues is that it changes rates in the manner that will least affect the consumption patterns resulting from marginal cost pricing. The disadvantages are that income is redistributed and price elasticities of demand are difficult to measure. Newburger, *supra* note 21, at 583.

75. Metropolitan Wash. Bd. of Trade v. Public Serv. Comm'n, 432 A.2d 343, 353-64 (D.C. 1981).

76. In Generic Hearings Regarding Electric Rate Structure, 36 Pub. Util. Rep. (PUR) 4th 6, 53, 56-57 (Colo. Pub. Util. Comm'n 1979) the commission rejected the inverse elasticity rule and stated that the price elasticities of demand of the relevant customers were too difficult to determine accurately and that the benefits of marginal cost pricing might be lost. In Cost of Service Information, 43 Pub. Util. Rep. (PUR) 4th 451, 469 (Iowa State Commerce Comm'n 1981) the commission rejected inverse elasticity because it bases prices on "a customer's characteristics of demand and not the cost of providing service . . . ." *Id.*

77. H.R. REP. No. 496, *supra* note 4, at 8572.

78. *Id.*

79. FERC v. Mississippi, 456 U.S. 742, 745 (1982) (reversing Mississippi v. FERC, 49 U.S.L.W. 2553 (S.D. Miss. 1981)).

pletely in the regulation of electric utilities it could require states to consider federal standards in their regulation of electric utilities.[80]

PURPA, even with its imperfections, is a step in the right direction toward efficient pricing and hastens the recognition by state commissions of the harmful effects of declining block tariffs and automatic adjustment clauses

III. NATURAL MONOPOLY RATIONALE

The preceding discussion of the effects of electric utility regulation has demonstrated that regulation has probably caused as many problems as it has cured. Yet if the electric utility industry is a decreasing cost industry, and a monopoly would be the natural result of market forces, then any attempt at regulation is justifiable. Professor Demsetz has argued that even assuming a natural monopoly exists, there is no reason why, in the absence of regulation, monopoly prices have to be the result.[81] He argues that if economies of scale in production lead to one producer, they do not determine the number of rival bidders or potential competitors for a franchise. As long as there are no legal barriers to entry, transaction costs are trivial, collusion among bidders is difficult, and inputs of production are accessible at market prices, competition will prevail and the successful bidder will be forced to charge a competitive price. No dead weight loss would occur, since a different price structure, eliminating such a loss, could be proposed by a competitor and thus be the winning bid.[82] Existing production assets could be sold to the winning bidder, avoiding duplication of investment.[83]

Demsetz, however, assumes that natural monopoly characteristics are present. Recent studies and historical evidence suggest that natural monopoly characteristics may never have existed in the electric utility industry. Curiously, the phrase "natural monopoly" was rarely used by either the utilities or their critics during the period when state commis-

80. 456 U.S. at 765, 770-71.

81. Demsetz, *Why Regulate Utilities?*, 11 J. L. & ECON. 55, 57 (1968).

82. *But see* Meeks, *supra* note 15.

83. Demsetz has been criticized because a competitive rate of return is not synonymous with efficiency, the supposed goal of regulation. A competitive bid would presumably be at average cost, not marginal cost. Thus, some consumers would be willing to pay more for an additional unit of output than it would cost to produce that output. *See* U.S. DEP'T OF ENERGY, *supra* note 39, at 9-10. Other criticisms of franchise bidding are (1) bidding would not prevent price discrimination; (2) bidding would increase uncertainty, possibly raising capital costs; and (3) bidding would permit the dominant firm to strengthen its market position. Trebing, *The Chicago School versus Public Utility Regulation*, 10 J. ECON. ISSUES 97, 115-18 (1976).

sions were being formed.[84] Prior to that time, electric utilities were regulated primarily by municipalities. Competition flourished under municipal regulation. It was common policy to grant franchises to all who applied and every major municipality issued many duplicate franchises.[85] The competition induced by municipal regulation came to be viewed as bad policy because utilities consolidated, local regulators succumbed to corruption, and duplicate franchises created uncertainty and chaos.

A recent empirical study by Professor Jarrell[86] compared the effectiveness of the early competitive regulatory environment with the subsequent regulation by state commissions. Jarrell compared municipally regulated utilities with state regulated utilities in 1912. The results indicated that utilities under the competitive municipal environment had forty-six percent lower prices, thirty-eight percent lower gross profits and twenty-three percent higher output than utilities under state regulation. Furthermore, by 1917, after state regulation was established in the competitive states, prices and profits rose and output fell. Competition was a more effective check on utilities than was regulation. These figures raise serious doubts as to whether the electric utility industry is actually a natural monopoly. Other evidence demonstrates that electric utilities lobbied for state regulation in order to protect themselves from competition and municipal takeovers.[87] Professor Kahn has pointed out that the only factor in determining whether any firm exhibits natural monopoly characteristics is the presence of economies of scale.[88] Large fixed costs are merely a possible symptom of such economies. Agriculture is a high fixed cost industry, but efficiency permits many individual farms to supply the market.[89] Likewise, duplication of facilities is only inefficient in the presence of long run decreasing costs internal to one firm. The crux of the matter is whether two or more firms have the same costs as a single firm in the same market. If this is the

84. R. HELLMAN, GOVERNMENT COMPETITION IN THE ELECTRIC UTILITY INDUSTRY 60 (1972).

85. Jarrell, *The Demand for State Regulation of the Electric Utility Industry*, 21 J. LAW & ECON. 269, 273 (1978). *See also* 2 A. KAHN, *supra* note 12, at 117-19.

86. Jarrell, *supra* note 85.

87. D. ANDERSON, *supra* note 1, at 44.

88. 2 A. KAHN, *supra* note 12, at 119-23.

89. Typically the fixed assets associated with the electric utility industry have a long useful life. One commentator has shown that "when useful life is taken into consideration the ratio of output to capital requirements in electric utility firms does not vary significantly from those industries not remotely considered to be natural monopolies." Primeaux, *Some Problems with Natural Monopoly*, 24 ANTITRUST BULL. 63, 70 (1979).

case, a natural monopoly does not exist.[90]

The preceding discussion implies that it may be very difficult for policymakers to determine whether true economies of scale are present. It is in the interest of utility managers to give the impression of economies of scale so as to avoid competition and possible dissolution. This self-interest, in combination with the regulated utility's incentive to increase rate bases or expand into new ventures,[91] makes it very difficult to distinguish true increasing returns and the case of an overextended excess-capacity system.[92] Utilities can make an argument that their marginal costs of additional output are always lower than the total costs of a new system. Only by comparing the full marginal costs of the utility with that of a competitor can economies of scale be determined.

Furthermore, the regulatory regime functions as if the electric utility industry performed just one service and as if that service were a natural monopoly, but the structure of the industry is not that simple. The industry performs three services: the generation, transmission and distribution of electricity.[93] The economic characteristics and competitive possibilities vary among the three sectors. The three services are vertically integrated in about seventy-seven percent of privately-owned utilities.[94] The remainder of the industry is made up of hundreds of small systems, usually publicly owned, operating only at the distribution level. Each service or functional level must be analyzed separately to determine if economies of scale are present, particularly since there appear to be few economies of scale associated with vertical

90. *But see* Faulhaber, *Cross-Subsidization: Pricing in Public Enterprises*, 65 AMER. ECON. REV. 966 (1975) who points out that subadditivity, not economies of scale, should be used to provide a formal definition of natural monopoly. He gives the example of supplying water to three towns. The cost of supplying one town is $300. The cost of supplying two towns jointly is $400. The cost of supplying three towns jointly is $650. Thus, the total cost to three separate companies of supplying all the water is $900. The total cost to two companies is $700. The total cost to one company is $650. But any two neighborhoods can supply themselves at a lower average cost ($200 apiece) than they incur with joint supply to all ($216.67). Thus, monopoly is not the inevitable result. *Id.* at 969-70. *See also* R. SCHMALENSEE, THE CONTROL OF NATURAL MONOPOLIES 3-4 (1979); Baumol, *On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry*, 67 AMER. ECON. REV. 809 (1977).

91. *See supra* note 39 and accompanying text (utilities purchasing coal mines).

92. Waverman, *Regulation of Intercity Telecommunications*, in PROMOTING COMPETITION IN REGULATED MARKETS 206-07 (A. Phillips ed. 1975).

93. Generation is the art of creating heat energy from fuel and converting that heat energy into electricity. Transmission is the transportation of high voltage electricity between generators or to bulk delivery points for distribution. Distribution is the delivery of low voltage electricity over short distances to retail customers. Generation and transmission constitute the bulk-power supply system.

94. Weiss, *Antitrust in the Electric Power Industry*, in PROMOTING COMPETITION IN REGULATED MARKETS 139 (A. Phillips ed. 1975).

integration.[95]

A. *Economies of Scale in Generation*

There has been a general consensus that economies of scale associated with power plant size once existed but have now been exhausted.[96] Recent studies conclude that while scale economies once existed in generation, by 1970 most firms had exhausted scale economies and that the largest firms were experiencing scale diseconomies.[97] The studies also found that the economies that once existed were not attributable to the growth in generator size, and that there was little relationship between the decline in costs and utility expansions.[98] Utilities with low growth rates reduced costs as much as the fastest growing firms.[99] One study concluded that technological change unrelated to increases in scale caused the cost decreases[100] and that the electric power industry may be characterized by substantial scale economies at moderate levels of output. A small number of very large multi-plant firms is unnecessary for efficiency in production and may lead to inefficiency.[101] Competition in the wholesale bulk-power market is possible, since most urban regions could support several bulk-power firms large enough to take advantage of scale economies. Even if the minimum efficient firm size is larger than these studies indicate, limiting the market to one or two large firms in an urban region, scale economies could still be exploited and competition sustained in the bulk-power exchange market[102]

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95. *Id.* at 156.

96. H.R. REP. No. 496, *supra* note 4, at 8572. A natural monopoly exists when demand for the firm's output never leaves the decreasing cost range of the firm's average cost functions.

> Once it does for any length of time, the firm ceases to be a natural monopoly by economic definition. This points out the realistic fact that a natural monopoly does not have an infinite life. That is, over time, demand may change and cause the demand curve to shift into the increasing portion of the average cost functions, eliminating economies of scale and terminating the natural monopoly status.

Fanara, Suelflow, & Draba, *Energy and Competition: the Saga of Electric Power*, 25 ANTITRUST BULL. 125, 135 (1980). A change in demand may result from such factors as an increase in income, an increase in population, or a redistribution of income towards groups who favor electricity consumption. Technological change may also lower the cost curves a sufficient amount to cause a firm to cease being a natural monopoly.

97. *See* Christensen & Greene, *Economies of Scale in U.S. Electric Power Generation*, 84 J. POL. ECON. 655 (1976); Huettner & Landon, *Electric Utilities: Scale Economies and Diseconomies*, 44 S. ECON. J. 833 (1978).

98. Christensen & Greene, *supra* note 97, at 656.

99. *Id.*

100. *Id.*

101. This result is in sharp contrast to Weiss, *supra* note 94, at 136, who overstates the minimum efficient firm size and also contradicts Essay, *Efficiency and Competition in the Electric-Power Industry*, 88 YALE L.J. 1511, 1513 (1979).

102. *See infra* notes 139-43 and accompanying text.

through a system of coordination among separately owned generating plants, each having equal access to transmission and distribution.[103] The size of the wholesale bulk-power supply market is limited by the costs of transmission, which vary in proportion to the distance and inversely with the square of the transmission voltage.[104] Recent technological advances in high-voltage networks make it economical for generating plants to serve large geographical areas.[105] As an alternative, firms too small for efficiency could merge until the optimally efficient scale is reached, improving the prospect for real competition among equally efficient suppliers.[106] Therefore generation, which accounts for over one-half of the total costs of the industry,[107] is not a natural monopoly because moderately sized firms exhibit economies of scale and economies can be exploited either by a system of coordination among generating units or by a merger of inefficient, small firms.

B. *Economies of Scale in Transmission and Distribution*

The little empirical work which has been done relative to scale economies in transmission is inconclusive.[108] Transmission is generally thought to be a natural monopoly.[109] Several transmission lines are thought to be wasteful since voltage capacity increases by the square of line size.[110] It is also true that additional right-of-ways are difficult to acquire, and that ownership of transmission lines is critical to the competitive possibilities available in the industry.[111]

A natural monopoly has also long been thought to exist at the dis-

103. Weiss, *supra* note 94, at 136. A coordination system can also increase the efficiency and reliability of several smaller firms within a region even if they, in fact, exhibit economies of scale. Weiss also found that many locations have several alternative bulk-power suppliers close enough to supply needed power. *Id.*

104. *Id.*

105. Meeks, *supra* note 15, at 74.

106. Christensen & Greene, *An Econometric Assessment of Cost Savings from Coordination in U.S. Electric Power Generation*, 54 LAND ECON. 139 (1978). A statistical study of 138 firms using 1970 data revealed that jointly owned electric utilities had lower costs than individually owned utilities. The study concluded that small firms should merge until efficient scale size is reached; that mergers of large firms that have fully exploited scale economies would yield no cost savings and would reduce competition; and that mergers among small utilities reap greater cost savings than do formal power pools. *Id.* at 152-53.

107. Weiss, *supra* note 94, at 135.

108. Huettner & Landon, *supra* note 97, at 893-95 found that increasing unit costs were statistically insignificant.

109. Weiss, *supra* note 94, at 144.

110. *Id.* at 136.

111. A firm that controls transmission may employ pricing and marketing practices that favor dependence on transmission facilities to assure its continued dominance. For example, a vertically integrated electric utility might impose a full requirements contract on a non-affiliated dis-

tribution level. Since fixed costs make up eighty-five percent of total distribution costs,[112] scale economies are dependent on load density rather than on absolute size of the network.[113] Efficiency does not preclude many small distribution firms from serving adjacent localities. A recent study, however, found that the cost curve facing a distributor becomes slightly U-shaped as the density of load increases beyond a certain point in heavily populated areas.[114] This indicates the potential for direct competition between distributors in heavily populated areas.

Competition at the distribution level has historically been rather intense when not prohibited by state territorial assignments.[115] Generally, such competition has taken the form of a duopoly between municipally-owned distributors and investor-owned distributors that are vertically integrated. Professor Primeaux examined the natural monopoly cost structure at the distribution level and found that average costs were actually less for municipal firms facing competition than for municipal firms which did not compete.[116] This relationship held true, however, only until an output frontier was reached at which the marginal costs of the competing firms were higher than the marginal costs of the noncompeting firms. According to the study, most municipal and private distribution firms were too small to reap the scale benefits of monopoly; but they accounted for only fifteen percent of the total retail sales of electricity. Admitting that monopoly firms could probably produce at lower costs than competitive firms, the study showed that they fail to actually do so in the absence of competition.[117]

Professor Hellman has also investigated competition in the retail electricity market, as well as threatened municipal takeovers of private

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tributor or deny a nonaffiliated distributor access to low-cost power. *See infra* notes 189-220 and accompanying text.

112. Huettner & Landon, *supra* note 97, at 897 n.16.

113. 2 U.S. DEP'T OF ENERGY, THE NATIONAL POWER GRID STUDY 376 (1979).

114. The cost curve has a shape somewhat between a "U" and an "L." Huettner & Landon, *supra* note 97, at 895-97.

115. 2 A. KAHN, *supra* note 12, at 116-19.

116. Primeaux, *A Reexamination of the Monopoly Market Structure for Electric Utilities*, in PROMOTING COMPETITION IN REGULATED MARKETS 175 (A. Phillips ed. 1975). In another study, Primeaux found there was no statistical difference between monopoly and duopoly market structures as they affect capacity utilization in the electric utility industry. Duopoly creates no more excess generating capacity than monopoly. Primeaux, *The Effect of Competition on Capacity Utilization in the Electric Utility Industry*, 16 ECON. INQUIRY 237, 247 (1978). Professor Hellman compiled over 100 case studies examining all three forms of competition. R. HELLMAN, *supra* note 84, at 228.

117. Primeaux, *A Reexamination of the Monopoly Market Structure for Electric Utilities*, in PROMOTING COMPETITION IN REGULATED MARKETS 175 (A. Phillips ed. 1975).

distributors, whether by purchase or franchise expiration.[118] His study concluded that private companies exposed to government competition had lower rates and that their rates of return rose when compared to companies not facing competition.[119] The distribution level therefore seems to be a tenuous natural monopoly. There is a possibility of very slight diseconomies of scale associated with distributors in regions that are densely populated and great inherent inefficiencies associated with distributors located primarily in regions requiring only moderate electric service.

IV. COMPETITION AND COORDINATION

A. *Need for Competition and Coordination*

In the early 1960's, the Federal Power Commission (FPC) recognized that benefits could be achieved through the interconnection and coordination of utilities in such a way that efficiency and reliability could be enhanced.[120] This phenomenon also illustrates that any existing scale economies can be exploited in generation, particularly at the plant level. Several commentators have described these benefits.[121] They can be categorized into five groups: reserve sharing, economy exchange, diversity exchange, central economic dispatch, and coordinated system planning.[122]

Electric utilities must maintain reserve generating capacity to meet any contingencies that may arise such as mechanical breakdown, scheduled maintenance shutdown, or underestimated peak demands. This reserve can be a very large expenditure, perhaps twenty to twenty-five percent of existing capacity.[123] A greater number of interconnected generators give rise to a smaller percentage of reserves needed per firm since maintenance can be staggered and risks of breakdowns at peak periods are reduced.

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118. R. HELLMAN, *supra* note 84, at 228. Yardstick competition is competition by example. A private distributor's performance and costs are compared to those of a contiguous municipal firm acting as a benchmark. Many state regulatory commissions utilize this approach as a check on the conventional regulatory process.

119. *Id.* at 228. The rise in rates of return is attributable to a combination of lower prices, elastic demand and declining costs. *Id.*

120. 1 FEDERAL POWER COMM'N, NATIONAL POWER SURVEY 3 (1964).

121. Essay, *supra* note 101, at 1514-18. Hjelmfelt, *Exclusive Service Territories, Power Pooling and Electric Utility Regulations*, 38 FED. B.J. 21, 28 (1979). S. BREYER & P. MACAVOY, *supra* note 34, at 96, estimate that a one to two billion dollar cost saving per year would accrue by 1980 under optimal coordination.

122. Essay, *supra* note 101, at 1514.

123. Hjelmfelt, *supra* note 121, at 28.

Economy exchange exploits the marginal cost differential existing among generators. Arrangements are made so that firms with higher marginal production costs buy power from firms with lower marginal generating costs at a price somewhere between the difference. The result is a lower cost of production. A large number of interconnected plants enhances the possibilities for lower costs. Central economic dispatch is a highly technical method of utilizing this concept within a formal pooling arrangement. Generating operations of the coordinated system are managed by a central computer which continually utilizes only the most economical generators as demand for electricity fluctuates.

Diversity exchange is a means of leveling peak demand periods among coordinated utilities. Since different utilities experience peaks at different times, an exchange of power is possible, thereby allowing each utility to reduce the capacity needed to meet its particular peak demand.

Investment decisions can also be coordinated so that individual firms are not left with excess capacity when new generating plants are built. A single utility seeking to expand must build a generator as large as the minimum efficient size required for scale economies. However, if utilities coordinate investment plans and then stagger construction, each utility's incremental demand can be met without undue excess capacity.

One observer has suggested that the efficiency and reliability associated with coordination would be maximized by the merger of existing utility firms into twelve or fifteen regional giants, each having a monopoly within its region.[124] Not only would this approach foreclose the benefits that accrue from competition, it would also cause diseconomies of scale given the empirical evidence.[125] There are two alternatives to large multi-plant firms: pools[126] or individually negotiated contracts between interconnected firms. A recent study by Christensen and Greene indicates that formal pooling relationships have no demonstrated cost advantages over informal relationships or arms-length transactions.[127] Technologically, the opportunity exists for electric util-

124. Cook, *Co-ordination and the Small Electric Power System*, PUB. UTIL. FORT., Nov. 23, 1967, at 19, 24.

125. *See supra* notes 97-101 and accompanying text.

126. "[P]ooling generally refers to more formalized agreements to secure economy of bulk power supply through reserve sharing, joint planning, and coordinated operation." FEDERAL ENERGY REGULATORY COMM'N, POWER POOLING IN THE UNITED STATES 2 (FERC-0049, 1981).

127. Christensen & Greene, *supra* note 106.

ities to coordinate informally. Most generating plants are connected to other plants within their area.[128] Nevertheless, there is evidence that coordinating opportunities have not yet been fully exploited.[129]

Competition among electric utilities would undoubtedly benefit the industry. The Supreme Court has said that competition leads to the "best allocation of our economic resources, the lowest prices, the highest quality and the greatest material progress . . . ."[130] In competitive markets prices respond quickly to cost changes and there is no regulatory lag period reducing the allowed rate of return during inflationary periods. Capital markets in a free economy have enough flexibility to attract investors. Competitive pressures can serve as a constraint on rate-base inflation, the maintenance of excess capacity, the disincentives for efficiency associated with automatic adjustment clauses, the propensity toward cost inflation and the ability to shift risk onto the consumer. Competitive pressures also identify artificial restrictions on the size of markets. In addition, competition puts a dynamic pressure on firms to explore the slope of their cost functions and the elasticity of their demand. Competition forces firms to pursue technological innovations and thus improve the quality of services provided.[131]

The difficult question is whether the economies associated with coordination are sacrificed by the introduction of competition. Is there an inherent conflict within the industry when utilities both compete and cooperate? In order to examine these questions it is necessary to understand how the industry is structured and determine where competition presently and potentially exists.

B. *Interface of Competition and Coordination*

1. Industry Structure

The structural trend within the electric utility industry has been

128. EDISON ELECTRIC INSTITUTE, *supra* note 23, at 18.

129. FEDERAL ENERGY REGULATORY COMM'N, *supra* note 126, at 9. Fewer major utilities are members of pools today than in 1970, though small utility participation has slightly increased. The number of informal arrangements has not risen appreciably.

130. Northern Pac. Ry. v. United States, 356 U.S. 1, 4 (1958).

131. Trebing, *Broadening the Objectives of Public Utility Regulation*, 53 LAND ECON. 106, 108 (1977). A recent study was made of various combination utilities competing with straight electrics to determine the effect of competition on x-inefficiency at the generation level. X-inefficiency is the employment of inputs in excess of the minimum resource requirements for production. The study concluded that competitive pressure led to the enforcement of higher levels of efficiency on the work forces of combination utilities. Stevenson, *X-inefficiency and Interfirm Rivalry: Evidence from the Electric Utility Industry*, 58 LAND ECON. 52, 64 (1982). *See infra* notes 144-45 and accompanying text.

toward greater concentration and vertical integration among a declining number of investor-owned utilities.[132] All but a few of the 100 largest investor-owned utilities are vertically integrated. Although this integration apparently is the result of historical occurrences, it has become a rather useful tool in recent years in maintaining monopoly power. For technical and economic reasons, generating facilities had to be located near customers. "It made sense [originally] to have a single owner for all facilities and thus the industry pattern was set."[133] However, the economies of vertical integration do not seem great.[134] The generation, transmission and distribution of electricity require different types of management and equipment. Any possible reliability enhancement due to vertical integration could be offset by a system of coordination. Furthermore, vertical integration permits an inefficient generating plant to supply its captive distributor, in order to make a contribution to the firm's rate base.

Municipal utilities are much larger in number (roughly 2,200)[135] but relatively small in size. Typically, municipal utilities are operated exclusively as distributors. "The most common pattern is for a relatively large vertically integrated system to serve an extensive geographic area, with several smaller . . . municipal systems existing as islands within the larger system's sphere of operation and frequently purchasing all or part of their power at wholesale from the larger system."[136] In recent years, because of the conflicts and financial problems associated with investor-owned utilities, some municipal systems have invested in their own generators.[137]

2. Competitive Possibilities

It has been suggested that opportunities exist for competition in the electric utility industry at both the generation and distribution levels.[138] These levels also serve to divide markets. The bulk supply market, i.e., the generation and transmission of electricity, can be gen-

132. EDISON ELECTRIC INSTITUTE, *supra* note 23, at 18. In 1976, there were less than 366 investor-owned utilities, down from 1401 in 1937. H.R. REP. NO. 496, *supra* note 4, at 8570.

133. *Id.*

134. Weiss, *supra* note 94, at 156-57.

135. Pace & Landon, *supra* note 14, at 7.

136. Meeks, *supra* note 15, at 68-69.

137. EDISON ELECTRIC INSTITUTE, *supra* note 23, at 18. Currently, municipal systems own less than 10% of installed generation capacity. But "over ⅓ of the generating capacity scheduled to come on line during the 1980's will be publicly owned." *Id. See also infra* notes 198-99 and accompanying text.

138. *See supra* notes 96-119 and accompanying text.

erally linked with the wholesale market for electricity. The exception to this link is the generation and transmission of electricity to large industrial users which is considered a part of the retail market. Distribution of electricity can be generally linked with the retail market for electricity.

The wholesale bulk-power market can be broken down into sales for resale to distribution companies and sales to the power exchange market.[139] Theoretically, three forms of competition exist in the sales for resale portion of the market: (1) competition among large private utilities to supply retail distribution systems, (2) competition between municipal and private bulk-power suppliers to serve retail distributors, and (3) competition between wholesale suppliers and the power exchange market as alternative sources for part of the supply needs of distribution systems. The lattermost would require distributors to go directly to the power exchange market for a portion of their requirement. In reality there has been limited competition between private and public bulk suppliers. Competition among generating firms is impeded by the ownership of transmission and distribution systems by individual firms. Transactions actually involving "wheeling"[140] are mostly voluntary. Wheeling can be compelled only under very limited circumstances.

A recent study of competition between a private and a public bulk supplier revealed that both competition and coordination co-existed.[141] Private generating firms facing competition from a generation cooperative[142] were forced to hold wholesale prices below fully distributed costs. Despite the presence of competition, however, every government bulk-power supplier was interconnected and coordinated with neighboring private systems.

The power exchange portion of the wholesale bulk-power market would almost certainly foster both competition and coordination since it produces economic gain for all participants. Besides coordination-

139. Trebing, *supra* note 43, at 97. The power exchange market involves sales and purchases of generation and transmission capacity to achieve optimal coordination. *Id.*

140. Wheeling involves electricity generated by one firm, transmitted by a second firm and then delivered to a third party. The generating utility receives payment from the customer and the wheeling firm receives payment for the use of its transmission lines. *See infra* notes 201-20 and accompanying text.

141. FEDERAL ENERGY REGULATORY COMM'N, *supra* note 126, at 64.

142. Cooperative systems are primarily distribution systems which are financed by the Rural Electrification Administration (REA) to provide electricity to consumers in rural areas. Several generation cooperative systems also receive REA assistance.

exchange possibilities,[143] there would also be extensive competition for individual unit sales and ownership interests in the power exchange market.

The retail market can be subdivided into five categories of competition: (1) interfuel competition in the residential, commercial and industrial retail markets, (2) franchise competition in the same retail markets, (3) fringe area competition for loads located on the periphery of utility service areas, (4) industrial load competition, and (5) yardstick competition in all retail areas.

Bulk-power suppliers, as well as distributors, face interfuel competition. Studies indicate that there is significant competition between gas and electric energy suppliers. Combination utilities, those selling both gas and electricity, have higher rates and sell less power than those utilities selling only electric energy and serving a different market, the so called "straight electrics."[144] This result suggests that spirited competition exists between suppliers of the two fuels. Since inter-fuel coordination does not exist, there is no conflict between coordination and competition. A conflict may exist between combination and straight electric firms, but combination firms make up only a small share of the market and probably should be divested.[145]

Franchise competition involves the right to serve a designated geographic area. Franchise competition exists only with respect to municipal takeovers of investor-owned distribution facilities. Procedurally, a municipality must first condemn the investor-owned distributor. Some states, however, do not confer the right of eminent domain upon municipalities[146] and thus totally preclude this threat.

Fringe area competition occurs for loads in close proximity to adjacent service areas of otherwise non-competitive utilities. Approxi-

143. *See supra* notes 120-23 and accompanying text.

144. Weiss, *supra* note 94, at 140-42. Another study using 1968 data for 72 cities concluded:

> [T]here is a substantial degree of potential price competition between electricity and gas in residential markets. Since large industrial firms have the option of buying gas and generating their own electric power if commercial electric rates are too high, it is likely that at some point potential competition exists in that market as well.

Landon & Wilson, *An Economic Analysis of Combination Utilities*, 17 ANTITRUST BULL. 237, 260 (1972).

145. A statistical study confirms that combination utilities have greater monopoly power than straight electric utilities. Combination utilities usually engage in less promotional activity, charge higher prices, and have higher expenses. In addition, the customers of combination utilities appear to use less electricity. Collins, *Comparative Performance of Combination and Separately Managed Electric Utilities*, 40 S. ECON. J. 80 (1973). Combination utilities are also inefficient when compared to straight electrics. Landon & Wilson, *supra* note 144.

146. FEDERAL ENERGY REGULATORY COMM'N, *supra* note 126, at 63.

mately forty states have territorial legislation[147] prohibiting fringe competition for presently existing loads, such as a housing development or industry located on the utility's service border. Such legislation is not justified. If a natural monopoly exists at the distribution level, thereby making a duplication of facilities wasteful, then a technical barrier to entry precludes the necessity of a legal one. A potential rival will not contest an existing supplier knowing that his costs will exceed those of his competitor until he captures at least fifty percent of the market. The potential rival would have to finance his competitive activity with profits earned elsewhere to accomplish such a feat. It would only be rational to do this if the existing supplier charged too much or provided inadequate service. This is exactly the situation in which competition should be allowed. There is a possibility of direct competition if a large, vertically integrated utility seeks to drive a smaller utility out of business. This involves predatory pricing which is a matter controlled by the antitrust laws. Such exclusive service territories are unnecessary and inhibitive. Generally, as a result of antitrust legislation, utilities will only compete for new loads locating near their service areas.

Industrial load competition occurs to attract or retain large industrial loads within a designated service area. High industrial elasticities of demand suggest that this is an area of viable competition.[148] Yardstick competition is derived from an economic comparison of a public utility with a private utility. It may include direct price comparisons or inter-firm comparisons. Professor Hellman has extensively documented the incentives yardstick competition creates for utilities to reduce costs and lower rates.[149]

Taken as a whole, the evidence is mixed as to the effect of retail competition on coordination. According to the Nuclear Regulatory Commission licensing board, one pool arrangement was abandoned by a number of private utilities because of a concern that municipal utilities would become members.[150] Instead, a series of bilateral agree-

147. Hjelmfelt, *supra* note 121, at 21 n.1. *See, e.g.*, Matter of Certain Territorial Boundaries, 281 N.W.2d 65 (S.D. 1979), where a state statute requiring the state commission to assign exclusive service areas to electric utilities was upheld against a state constitutional attack even though appellant/customer could obtain power more cheaply elsewhere. *See also* Gulf States Utilities Co. v. La. Public Serv. Comm'n, 381 So. 2d 432 (La. 1980) (court upheld territorial service legislation).

148. Weiss, *supra* note 94, at 143-44.

149. R. HELLMAN, *supra* note 84.

150. FEDERAL ENERGY REGULATORY COMM'N, *supra* note 126, at 64.

ments were formed between the private companies. However, one major pool (New England Pool—NEPOOL) was formed to include many public and private utilities.[151] Yet territorial restrictions in several of the states where NEPOOL is located foreclosed retail competition to a great extent. In Florida, both public and private utilities have formed a brokerage system called Florida Electric Power Coordinating Group to facilitate the exchange of power. That group has avoided the usual deadlock through bilateral wheeling agreements.[152]

Other areas of potential competition remain to be explored. For example, new and differentiated services could be created offering a greater range of reliability at prices reflecting the differing grades of reliability. Such an offering would be attractive in the retail-industrial market as well as the wholesale bulk-power markets.[153] Another area of competition involves the technological displacement of conventional utility services through power produced close to the point of consumption.[154] Heat pumps, windmills, fuel cells, and solar energy fall into this category. Since technology has always been the enemy of monopoly, these sources will be competitive threats in the future.

A final area of competition involves co-generation.[155] Co-generation is not a new phenomenon, but given the high cost of energy it appears ready for a new acceptance. In 1950, co-generated electricity accounted for seventeen percent of the United States total. Yet in 1974, co-generation supplied only four percent of the total.[156] Co-generation is feasible as a source of power on a competitive basis both at the retail level as self-generation and at the wholesale bulk-power level if transmission facilities are available. The sharp decline in the use and production of co-generation is partially attributable to the extremely low prices utilities have been willing to pay industrial suppliers for their surplus energy. Utilities have shown little interest in purchasing energy which cannot be included in their rate base. This lack of demand has depressed prices to the point of discouraging production. In addition, a co-generator which provides electricity to a utility runs the risk of being

151. *Id.*

152. *See* Plummer, *A Different Approach to Electricity Deregulation*, PUB. UTIL. FORT., July 7, 1983, at 16.

153. Trebing, *supra* note 43, at 101.

154. *Id.* at 102.

155. Co-generation is the production of electricity from hot industrial-process steam before or after it has performed its function in the factory. Co-generation is fuel efficient since the heat performs a double function. *See* P. LEBEL, *supra* note 17, at 525.

156. CONGRESSIONAL RESEARCH SERVICE, *supra* note 65, at 52.

considered a public utility and thereby subject to state and federal regulation.

A documented case study illustrates the above problem.[157] Pacific Gas and Electric (PG&E), a large investor-owned utility, purchased energy until 1976 from a Georgia-Pacific pulp mill at a price of 2.5 mills/kwh. In 1976, Georgia-Pacific sought a higher price from PG&E. When PG&E refused, Georgia-Pacific agreed to sell energy to Northern California Power Agency (NCPA), a coalition of public distributors, for a price of 7.5 mills. However, the parties needed PG&E's wheeling services to transmit the energy thirty-five miles to an NCPA member city. PG&E refused to wheel since it wanted to retain the member city as a captive wholesale customer. Pacific Gas and Electric, under threat of an antitrust suit, raised its offering price for the Georgia-Pacific power to between fourteen and twenty mills. This price was still below the marginal cost of PG&E's generated power.[158]

Title II, section 210 of PURPA was enacted in 1978 to prevent utilities from inhibiting the development of co-generation by purchasing at too low a price or by refusing to wheel.[159] The Act requires a utility to offer to purchase electricity from qualifying co-generators and other small power producers at a price not greater than an amount equal to the utility's "avoided cost," the amount it would have cost the utility to produce the power itself or buy it from another source.[160] Under the Act, qualifying small power producers and co-generators may be exempt in whole or in part by FERC from federal and state regulation respecting rates and financial structure if FERC deems it necessary to encourage co-generation.[161] The Act also gives FERC authority to order the interconnection of a co-generation facility or small power producer with any electric utility, provided efficiency, reliability or conservation are enhanced.[162] The Commission has promulgated rules pursuant to the Act.[163]

Recently, the Supreme Court overruled a court of appeals' decision vacating two FERC rules governing co-generation facilities.[164]

157. Essay, *supra* note 101, at 1537 n.135.
158. *Id.*
159. 16 U.S.C. § 824a-3 (1982).
160. *Id.* § 824a-3(b).
161. *Id.* § 824a-3(e).
162. *Id.* § 824i.
163. 18 C.F.R. §§ 292.101-.602 (1983).
164. American Elec. Power Serv. Corp. v. FERC, 675 F.2d 1226 (D.C. Cir. 1982), *rev'd*, American Paper Inst., Inc. v. American Elec. Power Serv. Corp., 103 S. Ct. 1921 (1983).

One rule requires that utilities purchase electricity from qualifying co-generators and small producers at a rate that equals each utility's full avoided cost.[165] In defense of the rule, FERC argued that (1) a splitting of the savings between the co-generator and the utility would result in a utility-type regulation of the co-generator's rates which PURPA was designed to avoid, (2) rate reductions to utility customers from a split-the-savings approach would be minimal, (3) allocating all the savings to co-generators would provide a needed incentive for a higher growth rate of these technologies, and (4) there was considerable difficulty in setting an appropriate rate less than full avoided costs since different technologies are used in co-generators.[166]

The court of appeals found these reasons inadequate and vacated the rule for failing to clarify how rates set at full avoided costs are consistent with the statutory criteria for determining appropriate rates. That criteria includes a consideration of the public interest, the interests of the co-generators, and the interests of the consumers of electricity.[167] The court reasoned that a lower rate formula would still induce small producers to develop and yet would also allow consumers a lower price. The appeals court also stated that FERC should take into account the existence of competitive forces in determining the degree of regulation necessary. If a competitive market is found by the commission to exist, the court reasoned that regulation would be unnecessary since the rate set by market forces would best serve all interests.[168] The Supreme Court, however, agreed with FERC and upheld the rule. The Court found the rule to be noncoercive, noting that a waiver of the rule can be granted by any state regulatory authority and any nonregulated utility.[169] As an alternative, a co-generator and a utility can privately negotiate to set a price lower than the full avoided cost rate.[170]

The other FERC rule passed upon by the Court requires electric utility to interconnect with any qualifying co-generator or small producer as may be necessary to complete purchases and sales.[171] This rule allows co-generators to transmit electricity to a utility at will and thereby bypass the procedural and substantive provisions of PURPA requiring FERC to consider the impact of an interconnection upon a

165. 18 C.F.R. § 292.304(b)(2) (1983).
166. 675 F.2d at 1233-34.
167. *Id.*
168. *Id.* at 1236.
169. *American Paper Instit., Inc.*, 103 S. Ct. at 1929-30 (citing 18 C.F.R. § 292.403 (1983)).
170. *American Paper Instit., Inc.*, 103 S. Ct. at 1930.
171. 18 C.F.R. § 292.303(c)(1) (1983).

utility[172] and requiring FERC to give notice and an evidentiary hearing prior to the issuance of an interconnection order.[173] The court of appeals strictly interpreted the statutory provisions in holding that the rule was inconsistent with PURPA.[174] The Supreme Court upheld the rule noting that the statutory procedures were too costly for small co-generators. The Court stated that:

> PURPA may reasonably be interpreted to forbid the Commission to exempt qualifying [co-generator] facilities from being the target of applications under the FPA [Federal Power Act] for orders 'requiring . . . [a] physical connection,' . . . but not to forbid the Commission to grant qualifying [co-generator] facilities the right to obtain interconnections without applying for an order under the FPA.[175]

The decision of the United States Supreme Court regarding the full avoided cost rule is problematic. In order to assess the correctness of the decision the attending benefits to co-generators must be balanced against the costs to consumers. In addition, the difficulty of ascertaining an appropriate rate less than full avoided costs must be weighed against the reduction in incentives for utilities to bargain for the cheapest power under the full avoided cost rule. Obviously, co-generators must acquire at least a large percentage of electric utilities' avoided costs if they are to be a competitive force. An important additional problem in promoting co-generation is that presently PURPA's benefits extend only to small producers. If competition is to be promoted and the public welfare increased, utilities should be required to purchase from large producers also. There is no economic reason why the development of large producers should be foreclosed. Nevertheless, the

172. 16 U.S.C. § 824k (1982).

173. *Id.* § 824i(b).

174. 675 F.2d at 1239. Generally a hearing is needed to determine whether a proposed interconnection between utilities: is in the public interest, encourages energy or capital conservation, optimizes use of facilities or improves system reliability. 16 U.S.C. § 824i(c) (1982). Interconnections may also be disallowed if they impair the functioning of electric utilities or co-generators. *Id.* § 824k(a)(4).

175. *American Paper Inst., Inc.*, 103 S. Ct. at 1932. A state commission recently facing the issues ruled upon by the Supreme Court stated: "[a]ll things considered, there are more good reasons to support a 90 percent avoided cost rule than a full avoided cost rule. However, since full avoided cost is the 'law of the land' for the foreseeable future, this commission should adhere to it." Co-generators and Small Power Producers, 51 Pub. Util. Rep. (PUR) 4th 369, 385 (Ark. Pub. Serv. Comm'n 1983). The Arkansas Commission ordered that for capacity built or begun after November 9, 1978, the full avoided cost rule should apply. Capacity built or begun before November 9, 1978 was subject to the 90% rule. *Id.* The commission also noted that "[t]he interconnection rule should be adopted by this commission, whether the FERC interconnection rule remains in effect or not." *Id.* at 387.

Court's holding concerning interconnection is encouraging as there are no adverse effects flowing from a general requirement to interconnect and transmit electricity. A contrary decision would only burden co-generators and impede low cost coordination.

If co-generation is to take a more dominant role in energy production, the bias in favor of rate base inclusion must be eliminated. Only unrestrained competition at the generation level will enhance the demand for co-generation and thus benefit all participants. However, there is no reason why coordination between private co-generators and public utility generators should be hindered.

C. *Hindrances to Competition and Coordination*

Any existing tensions between competition and coordination do not flow from an inherent conflict. Rather, such tensions exist because of the regulatory scheme imposed upon the industry and because of the present structure of the industry. The nature of the regulatory scheme impedes competition and coordination in several ways. First, the conflicting statutory regulations between states deter interstate coordinating activities.[176] Second, rate regulation undermines coordination between utilities since it encourages capital investment while discouraging cost containment. Third, regulatory lag in an inflationary environment hinders price competition.[177] Electricity buyers will have a hard time comparing prices between states and determining where prices will eventually fall. Fourth, by imposing a monopoly status upon the industry, regulation has buttressed many anti-competitive strategies employed by large investor-owned utilities. Finally, since the industry is vertically integrated, any justifiable attempt by regulators to control one service level may be vertically extended to other levels.

The organizational structure of the industry has also fostered anti-competitive strategies by large private utilities. Such strategies have included territorial allocation provisions, provisions that prohibit the resale of wholesale power, long term full requirements contracts, price squeezes, restrictions on entry to power pools and refusals to wheel power.

Often electric power suppliers enter into market-sharing agreements that allocate territories for wholesale power sales or restrict or prohibit the resale of wholesale power. These agreements severely re-

176. Essay, *supra* note 101, at 1520. *See also* Meyer & Leland, *supra* note 27.
177. Hjelmfelt, *supra* note 121, at 32.

duce potential competition at the wholesale level. In the past, neither the FPC nor state commissions have shown interest in attacking territorial divisions.[178] In one case, however, the United States Department of Justice obtained a settlement by consent decree eliminating territorial restrictions on the sale of bulk power.[179] It is unclear whether antitrust laws will be enforced against electric utilities making such agreements.[180] FERC has invalidated contracts that prohibit the further wholesaling of power by wholesale customers.[181] In any event, elimination of these agreements, by itself, will have little effect as long as utilities refuse to wheel power and state territorial restrictions continue to exist.

Vertically integrated investor-owned utilities also impose long term full requirements contracts on unaffiliated distributors. This practice utilizes dependence on transmission facilities to assure its effect. Typically, the contract prohibits the power distributor from obtaining power from other utilities.[182] These contracts are often reinforced by provisions prohibiting purchasers, usually municipal distributors, from reselling that power. In effect, this precludes the possibility that a purchasing municipal distributor will compete for industrial loads. Historically, FERC has not attacked these practices.

Vertically integrated utilities have also been accused of selling wholesale electricity to municipal distributors at a price equal to or above the price the utility sets for its retail customers. Such a practice is termed a price squeeze and its primary purpose is to foreclose competition at the retail level. Whether real or potential, price squeezes have a deterrent effect upon a municipal utility's ability to attract and compete for industrial loads. The Supreme Court has ruled that the

178. *See, e.g.*, Florida Power & Light Co., 71 Pub. Util. Rep. (PUR) 3d 362, 364-65 (Fla. Pub. Serv. Comm'n 1967) (territorial agreement between municipal utility and private utility upheld as in the public interest since duplication of facilities was eliminated. The dissent argued that the effect of the decision was to eliminate competition between the parties and regulation of the parties. *Id.* at 366); Rural Elec. Convenience Coop. Co. v. Ill. Commerce Comm'n, 75 Ill. 2d 142, —, 387 N.E.2d 670, 672 (1979), *modified*, 109 Ill. App. 3d 243, 440 N.E.2d 404 (1982) (service agreement between electric cooperative and other utility deemed lawful); City of Lincoln v. Neb. Pub. Power Dist., 191 Neb. 556, 216 N.W.2d 722 (1974) (state commission approved service agreements between municipal utility and public power district).

179. United States v. Fla. Power Corp., 1971 Trade Cas. (CCH) ¶ 73,637 (D. Fla. 1971).

180. *See infra* note 214 and accompanying text.

181. Louisiana Power & Light Co., Opin. No. 110, Docket No. ER77-533 (Phase 1), Jan. 28, 1981, *modified* and *reh'g. denied* Opin. No. 110-A, June 24, 1981.

182. Given the high capital costs associated with unused capacity, a contract giving the supplier adequate notice before terminating a wholesale arrangement involving a large block of electricity seems justifiable. Yet, the time length specified in the contract should be no longer than is necessary to allow the supplier to absorb or dispose of the otherwise unused capacity.

FPC must consider whether wholesale rates set by utilities are discriminatory and anti-competitive in effect.[183]

As a defense to a price squeeze charge in a federal court, one integrated utility claimed that diverse regulatory procedures precluded parity between wholesale and retail rates.[184] The utility premised its argument on the fact that federal and state commissions have adopted different procedures. Wholesale rates are effective immediately upon filing a rate application subject to a refund if disapproved at a subsequent hearing.[185] Retail rates, however, must await approval before becoming effective. The utility argued, therefore, that its proposed state retail rate was the appropriate rate to be used in a comparison with the federal rate rather than the existing state rate. The proposed state rate would of course be higher than the existing one under present economic conditions and therefore above the wholesale rate. The court ruled that the existing retail rate was the appropriate benchmark since the proposed rate was too speculative and probably would not be granted in full anyway. The rate comparison evidenced sufficient proof of a price squeeze in violation of the Sherman Act.[186] The court found that the price squeeze injured the municipal utility by inhibiting both the attraction of new business customers at the retail level and the acquisition of other municipal distributor systems. However, antitrust

183. *See* FPC v. Conway Corp., 426 U.S. 271, 276-77 (1979). As of June 1976, 49 price squeeze cases involving utilities in 27 states were pending before the FPC. Fairman & Scott, *Transmission, Power Pools, and Competition in the Electric Utility Industry*, 28 HASTINGS L.J. 1159, 1173 n.55 (1977).

The Federal Energy Regulatory Commission has determined that a firm discriminates when the difference between its wholesale and retail rates are not based on a difference in costs. Union Elec. Co., 39 Pub. Util. Rep. (PUR) 4th 300 (FERC 1980). Thus, price discrimination can be ascertained only by considering the costs underlying the rates. A rebuttable presumption arises that a wholesale rate has anti-competitive effects if price discrimination exists, if the wholesale supplier and customer are in the same geographic proximity and if there are or could be alternative suppliers of electricity for the same load. Only the potential for an anti-competitive effect is necessary to establish a price squeeze case. Connecticut Light & Power Co., 31 Pub. Util. Rep. (PUR) 4th 315, 323-24 (FERC 1979). *See also* Holmes, *First Generation Price Squeeze Policy at the FERC*, PUB. UTIL. FORT., Sept. 30, 1982, at 32. However, existing price discrimination must be undue to be unlawful. *See*, Pennsylvania Power Co., 50 Pub. Util. Rep. (PUR) 4th 635, 640 (FERC 1983). "The only [price squeeze] remedy the FERC can grant is to reduce the wholesale price to the lower end of the 'zone of reasonableness'." City of Kirkwood v. Union Elec. Co., 671 F.2d 1173, 1178 (8th Cir.), *cert. denied*, 103 S. Ct. 814 (1983). FERC has decided as a general rule not to lower wholesale rates to the lower end of the zone of reasonableness to remedy differences between federal rate making policies and procedures and those of a state commission. *Pennsylvania Power Co.*, 50 Pub. Util. Rep. (PUR) 4th at 639.

184. City of Mishawaka v. Am. Elec. Power Co., 616 F.2d 976, 980 (7th Cir. 1980), *cert. denied*, 440 U.S. 1096, *reh'g denied*, 450 U.S. 960 (1981).

185. Under section 205 of the Federal Power Act, a maximum five month suspension can be ordered by FERC, 16 U.S.C. 824d(e) (1982).

186. *City of Mishawaka*, 616 F.2d at 983-86.

treble damages were not awarded given the peculiar circumstance of dual regulation in the electric utility industry. Instead, the court only awarded damages measured by the federal regulatory statute[187] providing for compensatory refunds to wholesale customers upon a determination by FERC that a filed rate was excessive. The court stated that the possibility of treble damages existed following a price squeeze only after proof of specific injuries suffered by the municipal utility as a result of an integrated utility's monopolistic behavior.[188] Under this reasoning, an integrated utility may be able to engage in a price squeeze and risk losing only the judicially determined excess amount charged to the distributor.

The ownership and control of transmission services fosters and sustains the most important anti-competitive strategies employed by large vertically integrated utilities. Utilities controlling the transmission of electricity can shape the actions of potential competitors by denying access to low-cost sources of power. This may take the form of a denial of access to power pools, a refusal to wheel power, or excessive wheeling charges. These practices, in effect, either force the municipal distributor to take its full requirements from the integrated firm or build a generator smaller than the minimum efficient size necessary to exploit economies of scale.

Pooling has been recognized by Congress as a means of enhancing coordination, thus making possible the low-cost production of electricity. As a result, Congress has authorized FERC to promote and encourage interconnection and coordination within geographical districts.[189] Conflicts over pool membership, however, have arisen between large vertically integrated private utilities and small municipal utilities. Small utilities generally stand to benefit substantially from pool membership but have little to contribute in terms of capital assets. The result has been that large utilities have extended membership to small systems only if they agree to contribute to the pool on the basis of the benefits they receive rather than the actual cost of interconnection.[190] This policy effectively forecloses municipal distributors from pooling arrangements and inhibits competition at the retail level. If a

187. *Id.* (applying 16 U.S.C. § 824d(e) (1982)).

188. *Id.* at 989-90. *But see* City of Newark v. Delmarva Power & Light Co., 467 F. Supp. 763 (D. Del. 1979) which implied that treble damages could not be awarded in a price squeeze action under any circumstances. *Newark* is probably the majority view. In any case, the burden of proving specific damages is prohibitively high.

189. 16 U.S.C. § 824a(a)-(f) (1982).

190. Trebing, *supra* note 43, at 104. Meeks, *supra* note 15, at 108.

municipal utility has any generating capability, federal courts have insisted that it be admitted into a pool provided it pays for the true value of the transmission services used, whether in kind or in cash.[191] In addition, small generating systems cannot be assessed a disproportionate amount by a pool for not maintaining a minimum capacity level. These small systems can only be charged an amount equal to the actual deficiency.[192]

In general, the courts and Congress have recognized "that power pooling arrangements, rather than unrestrained competition between electric facilities are in the public interest."[193] As a result, pools are presumed to be voluntarily negotiated and the presence or absence of certain discriminatory and anti-competitive provisions within the pooling contract are tolerated.[194] Some pools are indeed voluntary, allowing members to make exchanges with non-members and to compete with one another at the generation and distribution level. Under such circumstances coordination can compliment competition. NEPOOL, for instance has opened its membership to any utility regardless of size with no apparent conflict between coordination and competition.[195] Yet most pools, unlike NEPOOL, have membership restrictions and conflicts. Moreover, management decisions are usually made by committees rather than individuals and unanimous consent is often needed before any action can be taken.[196] Pools, however, are not the only

191. Gainesville Util. Dep't v. Fla. Power Corp., 402 U.S. 515 (1971); Central Iowa Power v. FERC, 606 F.2d 1156 (D.C. Cir. 1979).

192. Municipalities of Groton v. FERC, 587 F.2d 1296 (D.C. Cir. 1978).

193. *Central Iowa Power*, 606 F.2d at 1162.

194. Pool agreements need not provide for firm power sales:

> Under firm power sales, a utility promises to transmit to a wholesale distributor a specified amount of power with the same level of reliability as is provided in the utility's retail service. In contrast, under a 'unit power' sale—for which the agreement does provide—a utility promises to deliver a certain portion of its production from a particular generating unit; if the unit is not operating no power is dispatched.

Municipalities of Groton, 587 F.2d at 1298. Courts have reasoned that pricing schedules restricting competition between pooling members are lawful since they are reasonably necessary to ensure that costs and benefits are shared in a fair and predictable manner. *Central Iowa Power*, 606 F.2d at 1163.

195. Fairman & Scott, *supra* note 183, at 1195.

196. As one commentator has noted:

> [P]ools require complex, hard-to-achieve agreements that balance the interests and obligations of their members. They are difficult to form and difficult to operate. Probably the most important shortcoming of the power pools is that they lack a mechanism for creating the transmission network that would allow more economic dispatch of the region. Typically, no one has the economic incentive to eliminate transmission bottlenecks. Transmission planning and development is usually difficult, slow, and contentious.

Berry, *supra* note 7, at 16.

means to achieve efficient coordination.[197]

In recent years, as the private integrated utilities have suffered severe capital losses under rate regulation, municipal utilities have invested in new, unfinished construction projects begun by the private systems. The result has been an increase in joint ownership of generating units by investors and publicly-owned utilities. One prominent example is the case of Georgia Power[198] whose bond issue of 1974 failed to sell at a yield of 11 ⅝, 1.8 points above the market average for "Baa" utility bonds. Only when Georgia Power agreed to allow a cooperative utility to participate in the combined construction and ownership of five new generating units did construction begin. Thereafter, the Rural Electrification Administration loaned money at a discounted interest rate to finance the construction. Later in 1976, Georgia Power was again unable to raise sufficient capital and therefore sold a fifty percent ownership interest to several publicly owned utilities.

Although few publicly-owned systems have recently entered into joint ventures with private integrated systems, it appears to be an attractive means of raising capital since low-cost loans and tax exempt bonds support the construction projects.[199] The end result is that some small publicly owned utilities are able to share in the coordinating benefits accruing to the large systems. Despite this benefit, a trend toward combined public-private ownership would be unfortunate. Jointly owned utilities are an example of a restrictive pooling arrangement. All the problems associated with cost allocations and managerial inefficiencies are inherent in such a system. Moreover, previously cited empirical work has revealed that further scale economies do not exist at the firm level for large integrated firms.[200] Perhaps most importantly, existing competition would be seriously undermined since public-private ownership would enhance vertical integration, disadvantage utilities supported only by private money, and hide inefficiency and high costs in taxes.

Refusals to wheel power have been another major hindrance to competition and coordination. As early as 1935 Congress passed a statute directing the FPC to promote voluntary interconnection and coor-

197. *See* Christensen & Greene, *supra* note 106 and accompanying text.

198. Fanara, Suelflow, & Draba, *supra* note 96, at 131-33.

199. "At the end of 1979, 60 generating units in service were owned by more than one utility, as compared to 15 in 1970 and 5 in 1965. The number of jointly owned plants may exceed 100 by 1990, . . ." REPUBLICAN STAFF, 98TH CONG., 1ST SESS., WORKING PAPER: FEDERAL POWER ACT REFORM 1 (Mar. 21, 1983).

200. *See supra* notes 96-107 and accompanying text.

dination of electric-power facilities.[201] However, the specific language imposing common carrier obligations on transmission line owners was deleted.[202] As enacted, the statute gave no authority to the Commission to order wheeling, compel formation of power pools or enforce the antitrust laws against the electric utility industry.

Enforcement of the antitrust laws has come from a different direction. Under a 1970 amendment to the Atomic Energy Act of 1954,[203] the United States Department of Justice was given a role in the licensing of nuclear power plants. Before granting a license, the Nuclear Regulatory Commission (NRC) is required to seek the advice of the Justice Department concerning the license's competitive effect.[204] This has resulted in requests by the Antitrust Division for hearings on antitrust issues concerning not only participation by municipals in nuclear projects, but also their access to transmission systems and pools.[205] Many applicants avoid the hearings by negotiating license conditions. Often applicants agree to interconnect with municipal utilities, share reserves with them, or wheel for them.[206] For several reasons, this approach is not entirely satisfactory. First, the NRC has no leverage relative to coordination beyond antitrust situations. Second, as with any antitrust remedy, the pre-licensing negotiation process seeks to extract services from a reluctant monopolist without changing the incentives that discourage voluntary coordination—rate regulation and organizational structure.

In 1973, *Otter Tail Power Co. v. United States*[207] finally made the antitrust laws applicable to the electric utility industry. In that case, two cities decided not to renew the franchise of the Otter Tail Power Company, a vertically integrated, investor-owned utility. Instead, the cities decided to distribute power to themselves from another source. Otter Tail refused to either sell power wholesale or to wheel power to the two cities. The Supreme Court ruled that such use by an integrated utility of its transmission monopoly to destroy a municipal competitor was in violation of the Sherman Act. The Court, however, did not ex-

201. 16 U.S.C. § 824(a) (1982).

202. *See* Otter Tail Power Co. v. United States, 410 U.S. 366, 385-95 (1973).

203. 42 U.S.C. § 2135(c) (1982).

204. *Id.* § 2135(c)(1).

205. Weiss, *supra* note 94, at 164.

206. By April of 1978, 26 commitments were made to offer municipal utilities an ownership interest in a nuclear plant, 28 commitments were made to wheel power for electric systems and 27 commitments were made to share reserves with other systems. Essay, *supra* note 101, at 1532.

207. 410 U.S. 366 (1973).

pressly give the FPC authority to compel wheeling in the event anti-competitive practices are found. Consequently, the decision did not strengthen the FPC's position vis-a-vis antitrust enforcement.[208]

Municipal utilities unable to obtain transmission services from a competitor have argued that FERC should be required to enforce the antitrust laws against utilities that refuse to coordinate in order to injure a competitor. The Supreme Court has ruled that the FPC must weigh the competitive effects in determining whether a utility's transaction should be approved as being in the public interest.[209] Even with this authorization, the FPC was reluctant to aggressively push forward interconnections.

In 1978 Congress passed PURPA which contains a weak version of the common carrier scheme it rejected in 1935. FERC is now authorized, upon the application of an electric utility, to order any other utility to provide transmission services to the applicant.[210] The Act also exempts electric utilities from any state law that prohibits the voluntary coordination of electricity.[211] In principle, compulsory wheeling would greatly enhance coordination efficiency and promote competition at both the generation and distribution levels of the industry. The Act, however, places severe restrictions on the availability of wheeling. The Commission may not issue a wheeling order that will disturb "existing competitive relationships."[212] Furthermore, an electric utility may not be compelled to wheel electricity that would replace power currently provided to the applicant by the transmission line owner.[213] In effect,

208. FERC has no authority to enforce the antitrust laws. Florida Power & Light Co., 32 Pub. Util. Rep. (PUR) 4th 313, 326 (FERC 1980). But the Court did give such authority to the federal courts. *Id.* at 375-77. *See supra* note 192 and accompanying text.

209. Gulf States Util. Co. v. FPC, 411 U.S. 747, 759-60 (1973). The court focused on the language of the Federal Power Act stating that "[n]othing in the Act suggests that the 'public interest' standard of § 204 . . . is to be restricted to financial considerations. . . ." *Id.* at 759.

210. 16 U.S.C. § 824j(a) (1982).

211. *Id.* § 824a-1(a).

212. *Id.* § 824j(c)(1).

A recent FERC opinion held that the preservation of existing competitive relationships is a threshold requirement, therefore, a utility cannot be compelled to wheel under PURPA if such wheeling would cause the utility to lose wholesale or retail customers within its service area to other power suppliers. Southeastern Power Admin. v. Ky. Util. Co., 25 FERC ¶ 61,204 (1983) (opinion number 198). The opinion noted that the legislative history of PURPA indicated that the Act was designed to be competitively neutral and does not provide the Commission with a means for remedying anticompetitive conduct. *Contra* New York State Gas & Elec. Corp. v. FERC, 638 F.2d 388, 402 (1980), *cert. denied*, 454 U.S. 821 (1981). Under PURPA, an electric utility may be ordered to wheel power and energy under very limited circumstances, notably, to alleviate the impact of an oil shortage by increasing the availability of coal-fired generation or to alleviate the impact of excess capacity by increasing coordination services among utilities.

213. *Id.* § 824j(c)(2)(B).

the Act denies transmission services to a distribution level competitor and ultimately forecloses the development of a competitive wholesale market.

Since the enactment of PURPA, FERC has taken a slightly more active role, but the federal courts have refused to uphold its decisions. In *New York State Electric and Gas Corp. v. FERC*,[214] the Commission ordered the deletion from a wheeling contract of a provision prohibiting a municipal utility from selling wheeled power outside its city limits. The Court of Appeals for the Second Circuit ruled that the order would result in more power being wheeled than agreed upon and therefore exceeded the Commission's authority.[215] The dissent argued that the territorial provision removed by the Commission served to alter only the use and not the amount of power.[216] In any event, the additional power claimed only amounted to a supply sufficient to service twenty-seven residential dwellings.

In another recent case, *Florida Power and Light v. FERC*,[217] the Commission ordered F.P.&L. to file a single tariff to substitute for eighteen separate transmission service schedules all providing for an identical rate. To be included in the tariff was a policy statement to the effect that transmission services would be provided by F.P.&L. if the specific potential seller and buyer were contractually identified; the magnitude, time and duration of the transmission were specified prior to commencement; it could be determined that the transmission capacity would be available for the term of the contract; and the rate for such service was sufficient to compensate F.P.&L. for its costs.[218] The court ruled that this statement in effect made F.P.&L. a common carrier and therefore, under PURPA, the Commission was without authority to compel wheeling. The court refused to determine whether the Commission had authority to compel wheeling upon a showing of antitrust violations by a utility.[219] The Supreme Court has ruled that federal

214. 638 F.2d 388 (2d Cir. 1980).
215. *Id.* at 400-01.
216. *Id.* at 403 (Goettel, J., dissenting).
217. 660 F.2d 668 (5th Cir. 1981).
218. *Id.* at 671.
219. *Id.* at 676 (footnote omitted).

For a thoughtful and thorough discussion of Florida Power & Light Co. and New York State Elec. & Gas Corp., *see* Reiter, *Competition and Access to the Bottleneck: The Scope of Contract Carrier Regulation Under the Federal Power and Natural Gas Acts*, 18 LAND & WATER L. REV. 1 (1983). In a recent and perhaps ground-breaking case, a United States District Court granted a preliminary injunction ordering mandatory wheeling where an electric utility refused to wheel power for certain municipal customers unless they entered into new and more costly interconnec-

courts do have such authority.[220] The Fifth Circuit made clear that any attempt to foster competition in the wholesale or retail power markets is not sufficient to compel wheeling or even require inclusion of the policy statement in future tariffs.

V. FINDING A PLACE FOR COMPETITION

A. *Recent Proposals*

In the wake of recent criticism of rate regulation, various proposals have been offered for deregulating the electric utility industry.[221] One proposal would greatly restructure the present organizational framework.[222] This proposal calls for the enactment of legislation that would divide the nation into regional dispatching corporations (RDCs) for purposes of electric-power production. Each RDC would be privately owned and would acquire all of the high-voltage transmission capacity within its region. Each would lease generating plants from low bidding producers and dispatch electricity in a fully coordinated manner to in-

tion agreements. City of Chanute v. Kan. Gas & Elec. Co., 564 F. Supp. 1416 (D. Kan. 1983), *appeal docketed*, No. 83-1818 (10th Cir. June 24, 1983). The injunction was ordered even though wheeling would alter the status quo and grant the municipals a substantial portion of the relief they would seek at trial.

220. *See Otter Tail Power Co.*, 410 U.S. at 374-75.

221. For a partial list of writings advocating deregulation, *see* Dowd & Burton, *Deregulation Is Not an Answer for Electric Utilities*, PUB. UTIL. FORT., Sept. 16, 1982, at 21, 27 n.1; and Address by David Hughes, Commissioner Federal Energy Regulatory Commission, "Is There Life After Deregulation," Before the Institute of Regulation Rate Design Problems of Regulated Industries (Feb. 8, 1982) (copy on file at TULSA LAW JOURNAL office) (review of possible deregulation scenarios). Richard Gordon advocates complete deregulation of the industry as it is presently structured to preserve integration economies, coordination (planning and building savings), costs of restructuring the industry and possible extension of regulated service to a partially deregulated generation. R. GORDON, *supra* note 72, at 276. Professor Trebing criticizes such proposals for characterizing regulated firms as either essentially competitive or as natural monopolies. Trebing believes blanket deregulation proposals fail to recognize the highly interdependent and oligopolistic nature of the industry.

> In the electric power industry, deregulation would facilitate monopoly control of transmission networks and grids. Control of these facilities would foreclose entry by potential rivals into both new and established markets, and it would deny wholesale and industrial buyers access to lower cost sources of power. This could be accomplished by restructuring or conditioning admission to the power pools that manage transmission networks or by direct acquisition of transmission networks or by direct acquisition of transmission facilities through holding companies, joint ventures, and so forth. Deregulation would also encourage intercompany programs for the construction of giant 800-1200 Mw generating plants which could limit the options for innovation while promoting a community of interest among established firms.

Trebing, *supra* note 83, at 120. In addition, complete deregulation would be conducive to tight pooling arrangements and joint ventures to construct power generating facilities. *Id.* at 120 n.1. Proposals that call for vertically dismembering the industry in conjunction with deregulating the generation stage would obviate most of the forementioned problems.

222. Essay, *supra* note 101, at 1538-42.

dependent distributors. Utilities would continue to possess their own generating plants and distribution systems.[223] The RDCs would be subject to regulation but, to offset any Averich and Johnson effect, they would not be permitted to include leased generating plants in their rate bases. Distribution companies would purchase their full requirements from the RDCs at a price just covering their pro rata share of the capital and operating expenses of the RDC. To raise capital for the purchase of transmission facilities, the RDC could presumably issue low risk securities. The size of the RDCs would be determined by a cost-benefit analysis comparing transmission costs against coordinating benefits.[224] FERC would have exclusive jurisdiction over RDCs.

Another recent proposal to restructure the electric power industry and introduce competition has been offered by a utility manager.[225] Under this proposal, the present vertically integrated electric monopolies would be replaced by a dozen electric regions where separate generating and distributing companies would be linked together by regional energy brokers. The energy brokers would make the marketplace for transactions between generating and transmission companies. The generating companies would be free of regulation while the distribution companies would remain regulated.[226] Capacity would be sold to the distribution companies in the region at an auction through the regional energy broker. Bid and asked prices would be known and the market would be monitored to avoid collusion between buyers and sellers. Most capacity would be sold through long term contracts which could be traded in a secondary market. There would also be spot and short-term markets with forward transactions and possibly a futures market. Contracts would provide for a direct pass-through to the distribution company of all fuel and maintenance costs and penalties or bonuses for unit performance falling below or exceeding the contractual standards.[227]

Similarly, the broker would pay actual fuel costs incurred by generating companies out of receipts collected from distribution companies. Distribution companies would have the option of buying sufficient capacity on long or short term contracts. If they exercised their option, their position would be equivalent to an integrated com-

223. *Id.* at 1538-39.
224. *Id.* at 1540-41.
225. Berry, *supra* note 7.
226. *Id.*
227. *Id.*

pany with adequate capacity reserves. If they chose not to obtain all the reserves that they anticipated would be necessary, they could still meet all or part of their reserve requirements in the daily spot market.[228] The energy broker would be a party to all contracts to establish transmission costs and also would control the use of the region's available capacity to meet energy demand, holding at any given time a collection of long and short term contracts entitling each distribution company to a certain amount of capacity. The energy broker would be responsible for employing the total capacity available to meet energy needs as efficiently as possible through economic dispatch without regard to the distribution company's needs for specific capacity.[229]

Each distribution company would be entitled only to its contracted-for energy. If a company's needs were greater, it would have to resort to the spot market. The profits achieved from the efficient dispatch of the region would accrue to the distribution companies and would be based on the amount utilized by each generating unit, thereby increasing revenues to distributors holding contracts for low fuel cost units. Reserves kept on hand by the generating companies for reliability purposes would be charged pro rata to the distribution companies. Distribution companies in each region would form a regional association to monitor the performance of the broker, assure fairness, and exchange information about future load requirements.[230]

These proposals have many advantages. They would eliminate the monopolistic behavior characteristic of power pools and require fewer managerial decisions. Under the RDC plan, producers would have to compete for contracts to lease generating capacity. Under the energy broker plan, distributors would bid for producer contracts. Both plans are similar to the Demsetz approach[231] except that under the RDC plan, profits from efficiency accrue to consumers, while under the energy broker plan, efficiency savings accrue to distributors. In either case, distributors would be able to secure low cost bulk-power on an equal footing and thus be in a better position to compete with one another. The proposals would also presumably eliminate conflicting regulatory rules. FERC would retain sole jurisdiction over RDCs while the energy brokers would be overseen by a central distributor committee. Finally, under competitive conditions, new capacity would

228. *Id.*
229. *Id.*
230. *Id.*
231. *See infra* notes 81-83 and accompanying text.

be offered so that firms could achieve earnings adequate to pay the market cost of capital or ensure bondholders of the safety of their investment.

It is unclear, however, whether FERC could do a better job of regulating than the state commissions are presently doing. It is also unclear as to how the energy brokers would be overseen. A large supervisory committee composed of distributors may either bottle-neck in conflicting viewpoints, or because of a free rider problem,[232] impede efficiency.

B. *An Alternative Proposal*

Arguably, the proposals discussed above probably do too much too soon and are not likely to carry enough legislative support. Congress might be more receptive to competitive presumptive legislation as an initial starting place in increasing efficiency within the industry. Several options that employ either the carrot or the stick are available to induce the industry to begin restructuring itself into a more efficient and competitive market.

The stick could take the form of a general requirement of interconnection and wheeling at reasonable rates; the elimination of private and public territorial restrictions at the wholesale and retail levels; and increased antitrust enforcement against horizonal and vertical mergers, as well as combination utilities. This proposal falls short of requiring the dissolution of existing utilities or the condemnation of transmission facilities.

The carrot could take the form of rate regulation based on a differential level of profits. A differential level of profits could be related to a utility's market and its degree of competitiveness. The more competitive the market, the greater the relaxation of the level of profits associated with serving that market.[233] This would create a positive

232. A free rider problem will arise when one or more committee members believe that benefits will accrue to their constituencies regardless of any individual concessions they may make. Each committee member has an incentive not to make any contributions, believing that other members will bear the cost of the public good.

233. Trebling, *supra* note 43, at 108. State commissions are already rewarding or penalizing electric utilities on the basis of their managerial actions. *See, e.g.*, Southwestern Public Service Co., 27 Pub. Util. Rep. (PUR) 4th 302, 313 (N.M. Pub. Serv. Comm'n 1979) (Commission allowed .5% increase in rate of return as reward for efficient and prudent management), Detroit Edison Co., 47 Pub. Util. Rep. (PUR) 4th 292 (Mich. Pub. Serv. Comm'n 1982) (Commission allowed an increase in rate of return to encourage efficient management of generating facilities), Carolina Power & Light Co., 49 Pub. Util. Rep. (PUR) 4th 188, 249 (N.C. Util. Comm'n 1982) (Commission reduced return on common equity by 1 per cent as penalty for inefficient and imprudent

inducement for a firm to act in a competitive manner since the potential loss of the firm's market to a rival would always exist. Determining the competiveness of a market and an associated profit level might be problematic, but even an imprecise scheme would be sure to induce different strategies on the part of utilities.

C. *Probable Effects of Increased Competition*

It has been argued that increased competition would benefit municipal utilities at the expense of private utilities because municipal companies enjoy a tax-exempt status, a lower cost of capital, and preferential access to low cost federal power projects.[234] The argument is that municipals would be given an artificial advantage in the retail market, thus promoting increased public ownership of existing distribution systems. In effect, municipals would "skim the cream"[235] off the market, leaving only the high cost customers for private utilities to serve. To a lesser extent, public expansion into the wholesale bulk-power market would increase because of tax and cost-of-capital advantages.[236] Such contentions, however, are not well founded. Municipals have already inefficiently expanded into the wholesale bulk-power market as a result of being denied access to low cost power. Once smaller companies could obtain low cost bulk-power, the need to build their own generators would vanish.

At the retail level, some expansion of municipal utilities may occur. But the cost advantages of municipal utilities are often overestimated. Many municipals provide free services such as street lighting. Further, many municipals generate revenues in excess of cost in order to contribute to local governments. In 1973, local governments received in excess of 134 million dollars in revenue contributions to their general fund from publicly-owned electric utilities.[237] Interestingly, those municipals that had to contribute revenues to general funds operated more efficiently (at a lower cost) than those who did not. Argua-

management), Houston Lighting & Power Co., 50 Pub. Util. Rep. (PUR) 4th 157, 216-17 (Tex. Pub. Util. Comm'n 1983) (Commission reduced return on common equity by .5% as penalty for mismanagement). One commission has even threatened to base an electric utilities' rate of return on the success or lack of success of the utilities aggressiveness in soliciting and bringing on line cogenerators and/or small power producers. Idaho Power Co., 44 Pub. Util. Rep. (PUR) 4th 160, 164-65 (Idaho Pub. Util. Comm'n 1982).

234. Pace & Landon, *supra* note 14.

235. For a thorough review of this concept, *see* 2 A. KAHN, *supra* note 12, at 220-46.

236. *See* EDISON ELECTRIC INSTITUTE, *supra* note 23, at 25.

237. Nelson, *Revenue Contributions and Efficiency in Municipal Utilities*, 18 ECON. INQUIRY 509 (1980).

bly, once municipals obtain cheaper power they will not fully reduce rates, but rather transfer some profits to their general funds. Nevertheless, some municipal expansion would be beneficial by encouraging vertical disintegration in the industry. In graduated steps, as competition increases, subsidies to publicly-owned utilities should be eliminated to foster competition and efficiency.

The cream-skimming argument is generally cast in terms of a new competitive entrant choosing to serve only the most lucrative markets, leaving the less attractive markets to the established utility.[238] The retail-industrial and wholesale electric power markets are most susceptible to a revenue diversion of this kind. Generally a new firm will enter one of these markets either because it enjoys lower costs than the incumbent, it provides a service not provided by the incumbent, or the incumbent is engaging in cross-subsidization between different markets and cannot foreclose entry into all its markets. The first two cases illustrate conditions where an entrant should cream-skim as a matter of policy. In the case of a municipal cream-skimmer, vertical disintegration would again be encouraged. The remaining inelastic demand customers of the pre-existing utility, however, would have increased rates. The cross-subsidization case is more problematic. Cross-subsidization would likely take place upon the introduction of selective competitive pressures. That is, a utility would raise rates in monopolistic markets while reducing rates in competitive markets. This practice has raised many pricing and cost allocation problems in the communications industry, since price can be employed as part of a strategy to shape markets.[239] In the electric utility industry, however, a larger part of the total revenue would be subject to potential competition than in the case of common carrier communications. For example, forty-one percent of the sales of private utilities are made in competitive retail-industrial markets while thirty-one percent of the sales are made in the more monopolistic residential markets.[240] To the extent workable competition could develop in the wholesale market, residential markets would be more competitive. Since costs are assigned to specific customer classes identified in public hearings, political pressure would act to discourage cross-subsidizing.

An additional argument is that competition in the electric utility

238. *See* 2 A. KAHN, *supra* note 12, at 225-26 for a review of possible definitions of cream-skimming.

239. For a discussion of the problem in the communications area, *see id.* at 227-33.

240. Trebing, *supra* note 43, at 105.

industry is not viable as long as the price of electricity is based on average costs rather than marginal costs. This argument is undoubtedly correct. The objective of competition is to shift business from inefficient to efficient suppliers. Selection of power suppliers on the basis of their average cost of production will bear no necessary relationship to the suppliers' efficiency in furnishing additional power. Congress recognized the need for a more efficient pricing mechanism when it enacted PURPA. If marginal cost pricing or peak load pricing is not universally adopted, it may be necessary for Congress to pre-empt state legislation. Marginal cost pricing is feasible. Marginal costs of power transactions can now be estimated with accuracy.[241] However, under present conditions, marginal costs exceed average costs so the price of electricity would probably be higher in a competitive environment although residential customers would be the beneficiaries of reduced rates relative to industrial customers.[242] As pressures for efficiency increase, rates would probably come down. In any event, under the present regulatory scheme, prices are escalating with no foreseeable end.

Recently, the Federal Energy Regulatory Commission has shown an increased awareness of the need for competition and coordination in the electric utility industry. On June 8, 1983, Commissioner David Hughes unveiled a FERC experiment in competitive bulk-power electricity sales. Under the plan, eight publicly and privately owned utilities in Texas, New Mexico, and Arizona will open up their transmission grids to each other and furnish each other with market information. The expirement is on a voluntary basis and for a limited time period. In exchange for their cooperation in the experiment, FERC will grant the utilities more pricing flexibility and will allow the firms to keep a share of profits from their sales. FERC will also allow buying utilities to pass through all purchase costs.

The plan does not involve a common carrier obligation since transmission services will be available for a limited time period and available only to participants making certain coordinated sales. Commissioner Hughes stated that this action "could very well be the most important decision made by our Commission during this decade"[243]

241. Pace & Landon, *supra* note 14, at 43.

242. *See supra* notes 72-75 and accompanying text.

243. Speech by Commissioner David Hughes, before The New York Society of Security Analysts (June 8, 1983) (copy on file at TULSA LAW JOURNAL office). *See also* FEDERAL ENERGY REGULATORY COMMISSION, INSIDE F.E.R.C., June 20, 1983, at 8 and FEDERAL ENERGY REGULATORY COMMISSION, INSIDE F.E.R.C., June 13, 1983, at 1-2. The bulk-power experiment has also

given the experiment's potential impact on regulatory policy and industry operation.

VI. CONCLUSION

It is apparent that the present regulatory scheme has produced distortions affecting both the electric utility industry and its customers. The past justification for this regulatory scheme may no longer be valid in light of recent empirical evidence and experience. Congress must take affirmative steps to require interconnection and wheeling, eliminate territorial restrictions and empower FERC with antitrust remedies to induce vertical disintegration of the industry. Additionally, rate regulation based on a differential level of profits and marginal cost pricing should be required to induce competition. If efficiency and reliability are goals to be achieved, then competition must be relied upon in the years ahead to solve the problems confronting the electric utility industry.

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been endorsed by the House of Representatives Committee on Appropriations. H.R. REP. No. 217 97th Cong., 1st Sess. 130-31 (1983).