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David C. Hjelmfelt

# RETAIL COMPETITION IN THE ELECTRIC UTILITY INDUSTRY

DAVID C. HJELMFELT*

Retail competition among electric utilities has long been recognized as not being in the public interest.[1] There is reason to believe that today retail competition may in fact be in the public interest. Regulatory practices, however, often prevent or restrict such competition.

## I. THE NATURE OF RETAIL COMPETITION

Retail competition—that is, competition for sales to ultimate consumers of electricity—may take a variety of forms. First, distribution facilities may be duplicated, permitting door-to-door competition.[2] Second, utilities may compete for customers along the fringes of their service territories.[3] Third, interfuel competition may exist between an electric utility and an alternative fuel supply, such as natural gas. Fourth, electric utilities may compete for a franchise to serve a block of customers at retail. Fifth, utilities may compete to attract new industries to their service territories.[4] Sixth, performance comparisons between electric utilities may provide a form of yardstick competition.[5]

The focus of this article is on the first two forms of retail competition—door-to-door or direct and fringe area—for these are the competitive forms most often discouraged by regulation. Of these forms, fringe area competition requires some elaboration.

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* B.A., Kansas State University; J.D., Duke University; Member, Bar Associations of Colorado, District of Columbia, and Kansas.

1. Watson & Brunner, *Monopolization by Regulated Monopolies: The Search for Substantive Standards*, 22 ANTITRUST BULL. 559, 566 (1977); *compare* Kellman & Marino, City of Cleveland v. CEI: *A Case Study In Attempts To Monopolize By Regulated Utilities*, 30 CLEV. ST. L. REV. 5 (1981) (claiming advantages of retail competition).

2. Although this form of competition is considered unusual in the electric utility industry, no reliable statistics quantify the extent of the competition. Notable examples of door-to-door competition are found in the cities of Cleveland, Ohio, and Lubbock, Texas.

3. Meeks, *Concentration in the Electric Power Industry: The Impact of Antitrust Policy*, 72 COLUM. L. REV. 64, 94 (1972).

4. Most investor-owned utilities engage in efforts to attract new industry to their service area. Some economists have argued that electric rates have little impact in attracting customers to a utility's service area. *But see* Pace, *Relevant Markets and the Nature of Competition in the Electric Utility Industry*, 16 ANTITRUST BULL. 725 (1971). However, the Federal Energy Regulatory Commission (FERC) staff took the opposite approach in testimony filed in Minnesota Power & Light Co. in Docket No. ER78-425 (FERC 1978).

5. Even critics of yardstick competition recognize that performance comparisons may provide an effective means of applying pressure on electric utilities to improve performance. Pace, *supra* note 4, at 764-65; Stelzer, Testimony before the Nuclear Regulatory Commission, Consumers Power Co. (Midland Plant, Units 1 and 2) in Docket Nos. 50-329A and 50-330A (NRC), cited at 6 NRC 892, 982 (1977).

A. *Fringe Area Competition*

Fringe area competition generally occurs between a municipal system and an investor-owned system, a municipal system and a rural electric cooperative, or a rural electric cooperative and an investor-owned utility. Many investor-owned utilities have refrained from competing for fringe-area customers, even when free to do so. Ohio Edison Company, Toledo Edison Company, and the Cleveland Electric Illuminating Company agreed in the early 1960's not to compete.[6] In one instance a municipal system engages in fringe-area competition with both a cooperative and an investor-owned utility,[7] and in at least one situation, two municipal systems compete.[8]

No matter what the identity of the competing entities, most will likely compete to provide service to suburban residential areas, shopping centers, strip commercial areas, and industrial areas. The latter two categories are usually the most hotly contested.[9] These areas tend to provide high revenue per customer and high revenue per dollar of plant investment because of the large load per customer. Such areas are considered valuable additions to a utility's service area.

1. Restraints on Fringe Area Competition

Fringe area competition may be restrained through the exercise of a municipality's franchise power, by state statute,[10] by agreements between the parties, or by restraints imposed by a wholesaler on the area in which power can be sold at retail (usually an area of competition in which the wholesale supplier also sells at retail).[11] Recent changes occurring in the relationship between electric utilities and their customers, largely as a result of the Public Utility Regulatory Policies Act of 1978 (PURPA),[12] may further reduce retail competition. For example, there is a renewed emphasis on co-generation, in which an industry that requires heat in its manufacturing process can utilize waste process heat to generate electricity both for its own use and for sale to an electric utility. Former Federal Energy Regulatory Commission (FERC) Chairman Curtis stated that he would favor policies encouraging utility ownership of up to fifty percent of the co-generation facility.[13] The resulting close relationship between the utility and the industrial user makes it unlikely that the industrial user would respond to competitive overtures from another electric utility.

However, it has also been argued that co-generation could force increased competition in the form of generation cost comparisons, potential

6. Toledo Edison Co., 10 N.R.C. 265 (1979).

7. Dothan, Ala.

8. City of Fairhope, Ala., and Riviera Utilities Co., owned by the City of Foley, Ala.

9. W.R. Mayben, Legal, Engineering and Economic Aspects of Service Area Disputes (Oct. 29, 1973) (paper presented to American Public Power Ass'n Legal Seminar).

10. Meeks, *supra* note 3, at 95.

11. For example, the wholesale contracts of Ohio Edison as they existed in the early and mid-1960's employed such restraints. *See* Toledo Edison Co., 10 N.R.C. 265 (1979).

12. Pub. L. No. 95-617, 92 Stat. 3117 (codified as amended in scattered sections of 15, 16, 30, 42, 43 U.S.C.).

13. Inside FERC, Nov. 3, 1980, at 2.

loss of major retail industrial customers, and competition from co-generators for sales at wholesale to existing distribution systems.[14]

The potential for new co-generation facilities may be large. According to the Edison Electric Institute, co-generators in 1900 produced half the nation's electricity—a figure that had declined to five percent by 1974.[15] Co-generation provides a great increase in fuel efficiency. A typical electric utility is thirty-two percent efficient, while a co-generator may be eighty percent efficient.[16]

Also, as a result of PURPA, utilities are inserting remotely controlled load management devices in houses and commercial buildings. Utilities are also investing in energy conservation features in individual homes, such as attic insulation or thermal storage heaters, for which customers pay a monthly fee.[17] The resulting blurring of the distinction between consumer and seller will further reduce opportunities for retail competition between electric utilities.

## II. Regulation Is Not a Substitute For Competition

Economists who favor competition believe it will produce the most efficient allocation of resources over long periods of time.[18] Presumably, management faced with competition will be forced to adopt the best technology and provide the best service at the lowest cost. On the other hand, when no competition exists output will be reduced as management maximizes profits. Service may be reduced because sales are assured even when consumers are not treated well.

Historically economists identified certain utility firms as local monopolies; in a very restricted geographic area, one utility could most efficiently serve the demand. Over time, and with no real factual support, this concept was expanded until utilities were considered natural monopolies regardless of where they provided services.[19] Under the natural monopoly concept, economists, regulators, and legislators concluded that it was inefficient to have two utilities serving the same area. Thus, to insure the most efficient allocation of resources and at the same time prevent exploitation by the utility, utilities were allowed to maintain a monopoly status, but were subjected to regulation.[20]

Two factors draw in question the premise that retail competition between electric utilities should be discouraged. The first is the recognition that regulation is an inadequate substitute for competition; the second is that traditional natural monopoly theories have been inappropriately ap-

14. Jones, *The National Energy Act and State Commission Regulation*, 30 Case W. Res. L. Rev. 324 (1980).

15. The Wall St. J., Feb. 19, 1981, at 33, col. 4.

16. *Id.*

17. Public Power Weekly, Oct. 6, 1980, at 2.

18. Hamilton, *Forward to Public Utility Law Symposium*, 30 Case W. Res. L. Rev. 220 (1980).

19. Dr. Wein, testimony in City of Cleveland v. Cleveland Elec. Illuminating Co., No. C75-560, Tr. 18, 819-30 (N.D. Ohio 1980).

20. W. Shepherd & W. Clair, Public Policies Toward Business 348 (1979).

plied. This section deals with the adequacy of regulation as a surrogate for competition.

A. *Current Regulatory Practices*

Former Federal Power Commission (FPC) Chairman Lee White has been very critical of regulation. White states that: "The game is not Company A trying to provide better service at lower prices than all other companies, but rather Company A attempting to secure the highest rate the regulatory bodies will permit."[21] In general, state commissions "operate with inadequate budgets and are no match for the power companies with great sums of money at stake."[22]

Even when administered well, rate regulation does not insure that rates charged by electric utilities will be the same as rates in a competitive atmosphere.[23] Reasonable rates fall within a zone rather than at a discrete point. A rate may not be so high as to warrant rejection by the regulatory commission, and yet the same rate may be higher than the rate the electric utility would accept under the pressure of competition.[24] When rate regulation is not administered well, utility rates may be even higher. The principal rate engineer for the Cleveland Electric Illuminating Company has stated that as late as 1976 an electric utility could get as high a return as it wanted on equity under Ohio rate regulation. Competition from natural gas utilities provided the only check on rates.[25]

Not only does regulation fail to control rates adequately, it cannot insure efficient management or efficient allocation of resources. A tendency toward over-capitalization clearly exists under present regulatory schemes.[26] Moreover, a regulated company's right to recover cost increases by raising rates has had a tendency to lessen utility resistance to unreasonable wage demands.[27] The current use of automatic rate increases to pass on fuel cost increases eliminates incentive to shop for the best fuel prices.[28] Other observers have noted that private utility companies often are managed poorly because of their freedom from competition.[29] Absent competition, inef-

21. Lee White, *The Right to Federally Generated Power* 21 (Public Power Ass'n June 11, 1979).

22. *Id.*

23. Moore, *The Effectiveness of Regulation of Electric Utility Prices*, 36 S. ECON. J. 365 (1970).

24. Turner, *The Scope of Antitrust and Other Economic Regulatory Policies*, 82 HARV. L. REV. 1207, 1235 (1969).

25. Bingham, testimony in City of Cleveland v. Cleveland Elec. Illuminating Co., No. C75-560, Tr. 2905 (N.D. Ohio 1980). For example, the Cleveland Electric Illuminating Co. has received 92.2% of the rate increases it has requested from 1970 through 1979. Cleveland Press, July 10, 1980, at 4A, col. 3.

26. Averch and Johnson, *Behavior of the Firm Under Regulatory Constraint*, AM. ECON. REV. 1052 (1962); Hughes, *Scale Frontiers in Electric Power*, in TECHNOLOGICAL CHANGE IN REGULATED INDUSTRIES 44 (W. Capron ed. 1971).

27. Turner, *supra* note 24, at 1232.

28. Interestingly, it has also been argued that fuel adjustment clauses may encourage utilities to use fuel intensive technologies rather than making capital investments that might save fuel in the long run. Whether current regulation leads to over-capitalization or under-capitalization, the end result remains a misallocation of resources. Leaffer, *Automatic Fuel Adjustment Clauses: Time For a Hearing*, 30 CASE W. RES. L. REV. 228 (1980).

29. C. ELLIS, A GIANT STEP 90-91 (1966). In the past the electric utility industry grew and prospered in spite of management. Fraser, *Utility Bond and Commercial Ratings*, PUB. UTILITY

ficient firms and inefficient management have been recognized as being under little or no pressure to minimize costs, and are unlikely to be displaced by those who can do better.[30] For example, in February 1980, the White House Office of Consumer Affairs joined the state of North Carolina in asking FERC to initiate an unprecedented investigation of the management of Virginia Electric and Power Company.[31] They alleged that the company's plants were "extremely unreliable" and that the company "may have failed to pursue conversion of oil-fired generating facilities to coal-fired as expeditiously as possible."[32]

Under the present system of utility regulation, many important matters are left to the utility manager's discretion with little or no regulatory review. Among the areas receiving little regulatory attention are: 1) reserve levels, 2) reliability criteria, 3) depreciation rates, 4) type, size, and mix of generating resources, 5) new product development, 6) research expenditures, 7) aggressiveness in dealing with suppliers, and 8) salvage of obsolete plants. In most instances these matters would be more responsive to competition than to regulation.[33]

If utility regulation is not performing the tasks assigned within an acceptable margin of error, the commonly accepted justification for substituting regulation for competition must be examined. Although not the only rationale for economic regulation, the concept of natural monopoly is the traditional and most persuasive argument supporting regulation.[34] In large measure then, the substitution of state regulation for competition in electric utilities must stand or fall on the application of natural monopoly theories to the distribution of electricity at the retail level.

## III. Is the Retail Distribution of Electricity Characterized By Natural Monopoly Tendencies?

In general terms, a natural monopoly may be said to exist when one firm can satisfy the demand in a market at a lower cost than if two or more

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FORTNIGHTLY, Sept. 27, 1973, at 42, 44. Other observers have concluded that the public power sector which is subject to less formal regulation attracts a more competent management. Newberg, *Two Issues in the Municipal Ownership of Electric Power Distribution Systems*, 8 BELL J. ECON. 303 (1977). The overall cost of management is less with publicly owned systems. Hamilton, *supra* note 18, at 223.

30. Denison, *Explanations of Declining Productivity Growth*, SURV. CURRENT BUS., Pt. II, Aug. 1979, at 14-15.

31. *White House Seeks Probe of Vepco*, PUB. POWER WEEKLY, Mar. 17, 1980, at 6.

32. *Id.*

33. The Alabama Public Service Commission concluded that the Alabama Power Co. had not conducted its business in the most efficient manner, saying that:

> We are of the opinion and believe that this record shows that the proper exercise of "efficient and economical management" dictates that the Company take advantage of opportunities to divest itself of 25% of the Farley nuclear plant, either to company affiliates or to the rural Electric Cooperatives and municipal utilities. Such an action by the Company would make its rates more reasonable to the public.

The Commission, however, was without authority to compel the company to operate more efficiently. Alabama Power Co., No. 17094 at 5-6, (APSC July 12, 1976), *aff'd in pertinent part*, Alabama Power Co. v. Alabama Public Serv. Comm'n (Montgomery County Civ. Ct., Aug. 11, 1976).

34. Fanara, Suelflow and Draba, *Energy and Competition: The Saga of Electric Power*, 25 ANTITRUST BULL. 125, 126 (1980).

firms serve the market.[35] At the outset, it is important to note that the general definition is in terms of providing a service, rather than a product, i.e. the retail distribution of electricity. Also, the focus is on cost to the firm rather than on price to the consumer. Thus, even if a firm serving a retail market were to achieve lower costs as a monopoly, it does not follow that the resulting price to the consumer would be lower than if two firms competed to serve the market.

Economic literature presents no standard definition of natural monopoly theory, and different economists specify different sets of conditions necessary for natural monopoly.[36] One commentator, Primeaux, has identified various attributes of natural monopoly and has categorized those which are or are not dependent on economies of scale[37]—for their implementation or existence. The attributes dependent upon economies of scale include: 1) economies of scale in production, 2) relatively high fixed costs, 3) a single producer able to operate at lower costs than if two or more firms serve the market, 4) the impossibility of a large number of competing plants, 5) higher customer prices if more than one firm serves the market, and 6) a high degree of price elasticity. Attributes not dependent on economies of scale include: 1) the necessity for the product or services supplied, 2) inconvenience to customers caused by duplication of facilities, 3) use of products or services at the place of production, 4) the existence of special limitations on raw materials, and 5) an industry characterized by secrecy.[38]

The characteristics of a natural monopoly identified by Primeaux outnumber the characteristics that most economists would attribute to a natural monopoly. However, other economists would add the elements of time and a stable technology.[39] Power production technology is presently undergoing changes. Generating unit sizes advanced rapidly during the period from 1965 to 1980, with typical units increasing from around 250 megawatts (mw or 1,000 kilowatts) to as large as 1300 megawatts (mw) for nuclear units. A very real possibility exists that a long-term trend toward the use of alternative energy sources such as solar power, wind generation, and the development of small hydrogenerating stations will reverse the trend of central station service.[40]

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35. A natural monopoly is one "resulting from economies of scale . . . such that one firm of efficient size can produce all or more than the market can take at a remunerative price, and can continually expand its capacity at less cost than that of a new firm entering the business." Northern Natural Gas Co. v. FPC, 399 F.2d 953, 965 n.19 (D.C. Cir. 1968) (quoting C. KAYSEN & D. TURNER, ANTITRUST POLICY 191 (1959)).

36. Primeaux, *Some Problems With Natural Monopoly*, 24 ANTITRUST BULL. 63 (1979).

37. Primeaux defines economies of scale as existing when unit price declines as the scale of production increases. *Id.* at 64.

38. *Id.* at 64-65.

39. Dr. Wein, testimony in City of Cleveland v. Cleveland Elec. Illuminating Co., No. C75-560, Tr. 18,819-30 (N.D. Ohio 1981).

40. *See* Feldman and Giordano, *Financing Dispersed Generation Projects*, 37 PUB. POWER MONTHLY, Mar.-Apr. 1979 at 31. P. AREEDA & D. TURNER, 3 ANTITRUST LAW ¶ 621a at 48 states that "[d]emand may total millions of dollars annually and yet be 'too thin' *relative* to the minimum efficient scale of . . . a hydroelectric power generator . . . ." (emphasis in original). Changes in production costs and technology have lead to a flurry of applications for development of small hydro projects.

Because the natural monopoly theory is concerned with the firm rather than the function, production and transmission costs must be considered, as well as costs of retail distribution. In considering the impact of economies of scale, long-run decreased costs resulting from expansion of plants must be distinguished from short-run decreased costs resulting from better utilization of existing plants. Only the former is relevant to natural monopoly theory. The latter condition is not necessarily related to increasing returns of scale.[41]

A. *Economies of Scale*

Although economies of scale do exist in the production of electricity, such economies do not continue indefinitely. A study examining economies of scale in 114 firms revealed that in 1970 a larger share of electrical energy was generated by firms that had grown beyond the size at which they experienced economies of scale.[42] A study of direct competition among electric utilities found that competition forced firms reaching levels of production up to 222 million kilowatt-hour (kwh) to produce at a lower average cost than they would in a non-competitive environment.[43] Primeaux suggests that monopoly structure generates x-inefficiency, which raises costs of production. Any cost benefits from economies of scale are more than countered by the x-inefficiency.[44] Thus, even where economies of scale do exist, they are unimportant as an attribute of natural monopoly.[45] Studies demonstrating the exhaustion of economies of scale and the effects of x-inefficiency have led some commentators to conclude that no natural monopoly results from economies of scale at the generation level.[46]

Related to economies of scale is the fact that electric utilities have a high fixed-cost investment in relation to the revenue generated. The ratio of capital investments to revenue in the electric utility industry is about 4 to 1; for the steel industry, 1.7 to 1; and for retail stores, .3 to 1. The high fixed-cost ratio of electric utilities by itself has been argued as making utilities natural monopolies.[47] The capital employment in various industries is long lasting in some and short-lived in others. To allow for the differences in life of capital employed, Primeaux argues that if high fixed capital is relevant, the measurement should be in terms of output to depreciation of the capital

41. Primeaux, *supra* note 36, at 66.

42. Christensen & Greene, *Economies of Scale in U.S. Electric Power Generation*, 84 J. POL. ECON. 655, 656 (1976). Heuttner & Landon found the long run average cost curve to be U-shaped, with the lowest cost for firms ranging in size from 1600 mw to 3100 mw. Heuttner & Landon, *Electric Utilities: Scale Economies and Diseconomies*, 44 S. ECON. J. 883, 903, 907 (1978).

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

44. Primeaux, *supra* note 36, at 68.

45. *Id.*

46. Fanara, Suelflow and Draba, *supra* note 34, at 137; *see* Jarrell, *The Demand For State Regulation of the Electric Utility Industry*, J.L. & ECONOMIES 269 (1978); Meeks, *supra* note 3; Weis, *Antitrust In The Electric Power Industry*, in PROMOTING COMPETITION IN REGULATED MARKETS (A. Phillips ed. 1975); W. SHEPHERD & W. CLAIR, *supra* note 20.

47. R. CAYWOOD, ELECTRIC UTILITY RATE ECONOMICS 2 (1956). However, it must be kept in mind that regulation of the electric utility industry produces a tendency to over-capitalize.

employed.[48] Application of the output-to-depreciation measurement shows that capital requirements of electric utilities are not significantly different from those in industries not considered natural monopolies.[49]

B. *Customer Prices*

Another attribute of natural monopolies is that higher customer prices result when competitors enter the market. As shown above, even if lower costs resulted from having one producer in a market, there is no assurance that consumer prices will be lower. Conversely, with reference to the electric utility industry, it cannot be readily demonstrated that the presence of more than one firm in the retail market will produce higher consumer costs. Empirical evidence for this proposition is difficult to obtain because of the intervention of rate regulation. Primeaux relies on a comparison of rates between all cities served by the Missouri Utilities Company and the rates charged by the company in cities in which it faced competition. In all but two instances the rates were the same, regardless of whether competition existed. In two remaining cities, the rate was lower in Poplar Bluff, Missouri, where the company competed with a municipally-owned utility, and higher in Eldon, Missouri, where no competition existed.[50] The trouble with this type of analysis is that most horizontally integrated electric utilities use postage stamp rates, or rates based upon the company's cost of service to its entire service area. Thus, the rate to any individual city represents company-wide costs of service, rather than the actual cost of service to that particular city. The actual cost to serve customers in a particular city would equal company-wide costs only by coincidence. Substantial subsidization between groups of customers served by a utility may occur. Accordingly, the presence of competition could lead to higher consumer prices but for the company's policy of imposing postage stamp rates. As a result, the focus should be on the cost of serving a particular market.

Theoretically, it can be shown that the cost of service may be higher when one firm serves the market than where two firms serve the market.[51] If one assumes that the market considered is one city and that two firms exist in the market, only a detailed study of the location of the firms on their respective cost curves can reveal whether costs will be reduced if one firm serves the entire market. In the typical competitive situation, one firm would be a relatively small municipally-owned system and the other firm would be a much larger horizontally and vertically integrated investor-owned utility. Applying the results of one study,[52] the average total cost curve for the large utility will at some point begin to rise. Similarly, the average cost curve for the small firm's existing plant will first decline and then rise. However, the small firm, unlike the large firm, may yet obtain economies of scale by installing additional capacity to capture a larger share

48. Primeaux, *supra* note 36, at 70.

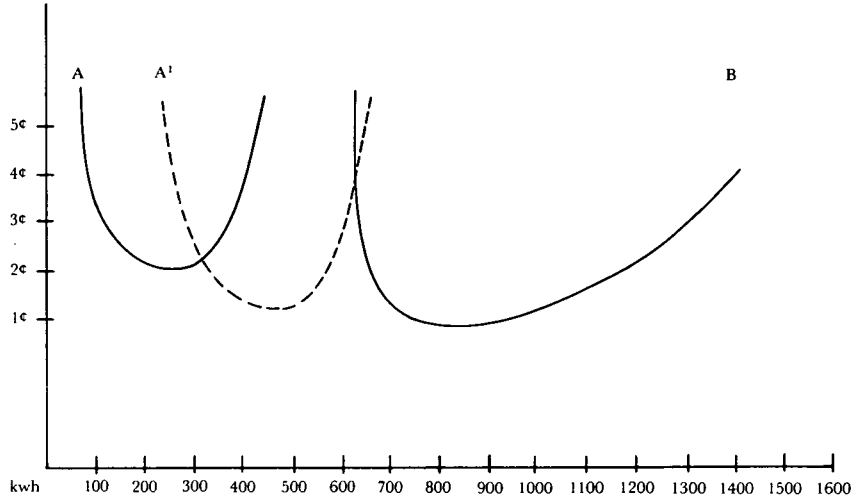
49. *Id.*

50. *Id.* at 78-79.

51. Dr. Wein so demonstrated as part of his testimony in City of Cleveland v. Cleveland Elec. Illuminating Co., No. C75-560, Tr. 18, 819-30 (N.D. Ohio 1981).

52. *See supra* authority cited in note 43 and accompanying text.

FIGURE 1.




Market is for 1400 kwh

| | | |
|---|---|---|
| A serves 400 kwh @ 4¢ | $16.00 ) | $36.00 |
| B serves 1,100 kwh @ 2¢ | $20.00 ) | |
| A serves 100 kwh @ 5¢ | $ 5.00 ) | $57.00 |
| B serves 1,300 kwh @ 4¢ | $52.00 ) | |
| A serves 300 kwh @ 2¢ | $ 6.00 ) | $33.50 |
| B serves 1,100 kwh @ 2.5¢ | $27.50 ) | |
| A serves 200 kwh @ 2.5¢ | $ 5.00 ) | $41.00 |
| B serves 1,200 kwh @ 3¢ | $36.00 ) | |
| A serves 0 | $ 0.00 ) | $70.00 |
| B serves 1,400 kwh @ 5¢ | $70.00 ) | |

of the load. On Figure 1, such a shift is downward and to the right to $A^1$.[53]

The calculations of cost to serve the market based upon the assumptions contained in Figure 1 demonstrate that it is quite possible for the cost of serving the market to be substantially higher if only one firm serves the market. In fact, it is apparent that total costs would be further reduced if a third firm serving 300 kwh entered the market at a time when Utility A served 300 kwh. The question then becomes one of whether Figure 1 sufficiently comports with reality to be of any analytical value. It is reasonable to conclude that it does.

1. Distribution and Design

Power production costs are by far the greatest portion of the cost of providing electric service. The incremental cost of providing service is generally rising. Distribution costs are generally not more than twenty percent of the cost of providing service. At least some evidence exists that distribution

53. All of the killowat hour (kwh) figures shown on Figure 1 are unrealistically low but serve to illustrate the theoretical concept.

costs may be lower in areas of competition than in areas of no competition.[54]

Moreover, there are no significant economies of scale in the distribution of electricity. In 1970, trends toward lower unit costs of distribution were noted to be approaching the point of diminishing returns. Overhead conductors were approaching practical limitations, and power factors had been raised to near unity. As primary circuit voltages increase to serve greater loads, the unit costs of line transformers, line switching, and protective equipment also increase, limiting overall potential savings.[55] In 1979, distribution economies were said to accrue from increased density of the service area but not necessarily from increased scale.[56]

The percent of the total cost of supplying retail power that is attributable to the operating cost of electric distribution has declined steadily. This result has largely been due to the tremendous increase in power production costs. Capital costs of distribution systems depend on a variety of managerial decisions that are not subject to regulatory scrutiny. The managerial decisions regarding distribution system design are not necessarily dictated by outside economic forces. To the extent that regulation promotes over-capitalization, the response may be to design a system of less than optimum efficiency.

The two major classes of distribution system design are: radial and network. At least a dozen common variations of the major classes exist, with the choice depending largely on the quality of service desired. The greatest problem may be in selecting the equipment components in various parts of a system that will provide the most economical design within the limits set. For example, certain types of systems may have inherently better means of regulating voltage than do others. Thus, when voltage regulation is provided at the distribution substation bus, auxiliary voltage regulation may be needed on primary distribution lines having different loading cycles, e.g., a residential feeder and an industrial feeder.[57]

Similarly, large distribution substations having many primary feeders of different lengths may require separate voltage regulation for each feeder. However, it may be less expensive to regulate voltage at the substation bus supplemented by pole-mounted regulators some distance from the substation as needed.[58]

A distribution system is cost sensitive to voltage because voltage must be maintained between fairly definite limits at the point of delivery to permit proper operation of equipment.[59] Maintaining closer limits than necessary will result in higher system costs. Therefore, automatic regulating devices must be carefully sized and located to insure economic system design.[60]

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54. Kemper, testimony in City of Cleveland v. Cleveland Elec. Illuminating Co., No. C75-560, Tr. 18, 385-89 (N.D. Ohio 1981).

55. FPC, *National Power Survey* (1970); Newberg, *supra* note 29, at 321.

56. U.S. Department of Energy, 2 THE NATIONAL POWER GRID STUDY 376 (1979).

57. Westinghouse Electric Corp., 3 ELECTRIC UTILITY ENGINEERING REFERENCE BOOK: DISTRIBUTION SYSTEMS 5 (1965).

58. *Id.* at 48.

59. *Id.* at 14.

60. *Id.*

Distribution engineering is, to a large extent, a matter of obtaining the most economic combination of system components. Many different sizes and ratings of equipment must be considered. This is particularly true in designing a system to serve areas of varying load densities with uncertain and different rates of load growth. Regulation cannot and does not provide significant oversight of the utility's efficiency in designing its system. The mere existence of regulation cannot be said to insure an optimal distribution system design.

More important to considerations of natural monopoly is the constantly changing nature of the area served. Thus, even if one assumed that a particular substation and feeder system were initially optimally designed, the design cannot be expected to remain optimal over the forty- to fifty-year life of the facilities. For example, if the substation initially served a residential neighborhood, with time the neighborhood may decay. Abandoned homes lead to excess capacity, and homes converted to businesses and apartments lead to a need to increase capacity. Some feeders from the substation may begin to serve industrial loads. As a result, additional less optimal voltage regulation may be required. If the firm no longer employs the lowest cost method in supplying service, its claim to natural monopoly is questionable.

The primary effect of retail competition is reduction of the density of the load served. Economically, the effect may be the same as holding the load constant and expanding the area served. An extensive area can be served by many distribution substations, each of relatively low kilovolt amphere (kva) rating, or by a smaller number of larger substations. As the system expands, transformer capacity, switching equipment, subtransmission lines, and primary feeder circuits must be added in practicable and economic increments.[61] However, a change in load resulting from competition does not always result in a substantial reduction of facilities required. For example, it is instructive to compare the facilities required to serve an area of twelve square miles with a 23 kilovolt (kv) primary feeder system in which the load density is 4000 kva per square mile with the facilities required to serve the same total load spread over a twenty-four-square-mile area. The load density for the twenty-four-square-mile area is 2000 kva per square mile or half the load density of the twelve-square-mile area. In each situation, one substation with a capacity of 4800 kva is required and five primary feeders are required.[62] Thus even economies claimed to be attributable to load density may prove to be ephemeral.

Other evidence also exists to demonstrate that the theoretical construct of Figure 1 is relevant for analysis of the natural monopoly status of electric utility firms. Primeaux's study of the cost of service in cities with competition is consistent with Figure 1.[63] Similarly, the Cleveland Electric Illuminating Company has made studies showing that its costs for service inside the city of Cleveland, where it faces vigorous competition, are comparable to

61. Westinghouse, *supra* note 57, at 72.
62. *Id.* at 84.
63. *See* Primeaux, *supra* note 36.

its costs for service in areas where no competition exists.[64] Additionally, economies of scale in management are probably smaller.[65]

## IV. THE EFFECT OF COMPETITION

If indeed the electric utility industry is a natural monopoly, economic forces should dictate the disappearance of competition in the cities in which it exists. Evidence of long-term competition can be found. For example, competition has existed in the city of Cleveland, Ohio, for nearly seventy years. Competition has existed in Sikeston, Missouri, for approximately fifty years.[66] A study of competition in Cleveland concluded:

> After 20 years of rate regulation in Cleveland by means of competition, it is difficult to find any basis of fact in the contention that this means regulation is wasteful because of duplicate investment and thereby an ultimate burden on the consumers. The records show that the citizens of Cleveland have received the lowest rates in the entire country over a 20-year period, yet the competing utilities have both made enormous profits even at these low rates.[67]

When examining a situation in which competition exists, additional factors must be considered that will not be significant when the question is simply one of whether competition should be initiated. If two utilities are already competing, the costs of installing duplicating facilities are sunk costs. The sale of either utility is unlikely to occur unless the selling utility is able to recover in the sales price an amount equal to the cost of the facilities used to provide the service. Moreover, the sales price is frequently based upon the cost of replacing all facilities at current prices minus depreciation. Whereas the rates are usually based upon original cost of plant minus depreciation. Poles used in distribution construction are long-lived. Thus, reproduction cost new will be substantially greater than the actual cost of the plant used to provide the service. The purchasing utility will enter the cost of the plant at the cost paid, e.g. reproduction cost new. The stepped-up cost of the plant claimed to be used may affect rates charged by increasing the rate base of the competing utility.

Moreover, it is unlikely that the purchasing utility would immediately remove the duplicate facilities. More likely, the duplicate facilities will be left in place and used by the purchasing utility for a number of years. Duplicate facilities would be removed only when new construction causes relocation of pole lines to accommodate street widening or the like. This is particularly true of mature service areas where additional load growth is not of a magnitude to require a change in service.

The presumption that the electric utility industry is a natural monopoly and that competition is to be discouraged in favor of regulation is outmoded

64. Bingham, testimony in City of Cleveland v. Cleveland Elec. Illuminating Co., No. C75-560, Tr. 2905-07 (N.D. Ohio 1980).

65. F. MACHLUP, THE POLITICAL ECONOMY OF MONOPOLY 52 (1952).

66. Primeaux, *supra* note 36, at 78.

67. E. KENEALY, THE CLEVELAND MUNICIPAL LIGHT PLANT 109 (1935).

and does not comport with economic realities. To the extent that regulation rests upon natural monopoly assumptions, it must be reexamined.

## V. ADMINISTRATIVE, JUDICIAL, AND LEGISLATIVE TREATMENT OF COMPETITION BETWEEN ELECTRIC UTILITIES

The general trend of legislative, administrative, and judicial treatment of competition between electric utilities has followed the old economic assumption of natural monopoly. Frequently, legislative policies have been influenced by industry lobbying. The underlying presumption has been that duplication of facilities to permit competition is wasteful. Deciding what is waste presupposes a number of value judgments as to the long-term good of society and presents difficult questions for philosophers and welfare economists. Courts are not well equipped to make such determinations. Moreover, a significant lag exists between the recognition of new "truths" by academicians and the acceptance of those "truths" by the courts. Judges tend to apply the law in accordance with economic theories prevalent when they were in college. Thus, the tendency is to freeze economic thought at given points until a new generation of jurists is seated.

Many court and administrative decisions have held, without critical analysis, that the electric utility industry is a natural monopoly. In *Cantor v. Detroit Edison Co.*,[68] the United States Supreme Court stated: "The very reason for the regulation of private [electric] utility rates—by state bodies and by the [Federal Power] commission—is the inevitability of monopoly. . . ."[69]

In *Jackson v. Metropolitan Edison Co.*,[70] the Court referred to electric utilities as natural monopolies created by the economic forces of high threshold capital requirements and virtually unlimited economies of scale. The Court said in *Otter Tail Power Co. v. United States*[71] that each town is "a natural monopoly market for the distribution and sale of electric power at retail."[72] In *Gulf States Utilities Co. v. FPC*,[73] the Court spoke of the "basic natural monopoly structure" of the electric power industry.

Other courts have also relied upon or referred to the presumed natural monopoly status of utilities. The Sixth Circuit Court of Appeals has referred to the natural monopoly possessed by a utility company in a city as a "classic case" of a lawful monopoly.[74] In *Lamb Enterprises, Inc. v. Toledo Blade Co.*,[75] a case involving competitors for community antenna television business, the

68. 428 U.S. 579 (1976).

69. *Id.* at 596 n.33 (quoting Otter Tail Power Co. v. United States, 410 U.S. 366, 389 (1973) (Stewart, J., dissenting)).

70. 419 U.S. 345 (1974).

71. 410 U.S. 366 (1973).

72. *Id.* at 369.

73. 411 U.S. 747, 759 (1973). In a broader context, the court has said that in "those areas, loosely spoken of as natural monopolies or—more broadly—public utilities . . . active regulation has been found necessary to compensate for the inability of competition to provide adequate regulation." FCC v. RCA Communications, Inc., 346 U.S. 86, 92 (1953).

74. Byars v. Bluff City News Co., 609 F.2d 843, 853 (6th Cir. 1979).

75. 461 F.2d 506 (6th Cir.), *cert. denied*, 409 U.S. 1001 (1972).

same court gratuitously stated that house-to-house competition for customers is not feasible for electric utilities.

The Court of Appeals for the District of Columbia has stated that competition between two electric suppliers would mean duplication and wasteful investment.[76] That court has also said that in natural monopoly markets, competition is sacrificed to avoid wasteful duplication of services and investment.[77]

In large part the above references to the natural monopoly status of the electric utility industry are dicta and based either upon conclusory testimony that merely parrotted traditional concepts or had no support in the record. Such statements are picked up and repeated in other decisions without further analysis, thereby perpetuating an assumption, the validity of which is doubtful. In what may be the only carefully litigated proceeding reaching a final decision as to the natural monopoly status of public utilities, the Atomic Safety and Licensing Board of the Nuclear Regulatory Commission found that a natural monopoly did not exist.[78]

The mistaken belief that competition by electric utilities is detrimental to the public interest has resulted in the enactment by at least forty states of legislation creating exclusive service territories.[79] However, where territorial divisions have not been mandated by legislation, voluntary territorial allocations between electric utilities have been condemned as *per se* antitrust violations despite the assumed natural monopoly character of the industry.[80]

A mistaken belief that electric utilities are natural monopolies has a tendency to make regulators and courts insensitive to anti-competitive acts of electric utilities. Further, antitrust standards more stringent than would be applied if no natural monopoly were assumed may be imposed. Thus, a court may conclude that market share is not evidence of monopoly power or that predatory acts must be shown in addition to monopoly power.[81]

It has been shown that competition is possible at both the production and distribution levels of the electric utility industry, and that competition may be expected to provide substantial benefits which cannot be provided by regulation. Without a conclusive showing that a particular utility is a natural monopoly in a specific market, there is no reason to anticipate that economic benefits will accrue from permitting a monopoly. Furthermore, even upon a showing of natural monopoly, changes in technology may remove the natural monopoly situation.

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76. Pennsylvania Water & Power Co. v. FPC, 193 F.2d 230 (D.C. Cir. 1951).

77. Northern Natural Gas Co. v. FPC, 399 F.2d 953 (D.C. Cir. 1968).

78. Toledo Edison Co., 5 NRC 133, *aff'd* 10 NRC 265 (1979).

79. Hjelmfelt, *Exclusive Service Territories, Power Pooling, and Electric Utility Regulations*, 38 FED. B. J. 21 (1979). Certification of service territories does not always end all competition. For example, Utah Power & Light Co. was permitted to serve a mine located in Empire Electric Association's certified territory because the mine was located closer to existing facilities of Utah Power & Light Co. Empire Elec. Ass'n v. Public Serv. Comm'n, 604 P.2d 930 (Utah 1979). *Contra* Sende Vista Water Co. v. City of Phoenix, 127 Ariz. 42, 617 P.2d 1158 (1980).

80. Otter Tail Power Co. v. United States, 410 U.S. 366 (1973); Pennsylvania Water & Power Co. v. Consolidated Gas, Elec., Light & Power Co., 184 F.2d 552 (4th Cir. 1950).

81. Union Leader Corp. v. Newspapers of New England, Inc., 284 F.2d 582 (1st Cir. 1960), *cert. denied*, 365 U.S. 833 (1961).

## VI. PROPOSALS FOR REGULATORY CHANGES

The first and most obvious regulatory change necessary, once electric utilities are recognized not to be natural monopolies, is the repeal of territorial legislation. The disappearance of territorial legislation will not bring about an explosion of retail competition, given the industry's deep-seated bias against direct competition. Rather, competition can be anticipated to continue to be impeded by unspoken gentlemen's agreements between neighboring utilities. Nevertheless, even without a substantial increase in direct competition, the elimination of territorial laws will create a potential for competition, which may produce many of the benefits that could be expected from direct competition.

Second, utilities owning transmission facilities should be compelled to make them available at reasonable cost on a space-available basis to any utility desiring to use them. For a number of economic and environmental reasons, the duplication of transmission facilities at present is frequently unfeasible. At the same time, competition at wholesale for bulk power supplies is not possible without the ability to "wheel" the power over a third party's transmission system.[82] Long-term, all-requirements contracts should be carefully reviewed to determine whether the alleged benefits of assured bulk power supply and greater ease of financing large generating facilities actually exist and outweigh the impediment to competition.

A third and more fundamental need is for legislators, regulators, and courts to recognize that regulation is not a substitute for competition, but rather is an adjunct to competition. For the present, regulation is necessary because in most instances no more than two or three utilities will compete in any given market. Competition between so few utilities—oligopolistic competition—will not produce results equal to competition by many firms. Nevertheless, every effort should be made to increase competition at both the wholesale and retail levels.

An increase in wholesale competition may be required before retail competition will substantially increase. Far too often the potential retail competitor is dependent upon its retail rival for its source of supply. This creates a price squeeze potential that has not been eliminated despite the Supreme Court's ruling in *FPC v. Conway Corp.*[83] that the Commission must consider price squeeze issues in considering wholesale rates. To date, the Commission's exercise of its price squeeze authority has been disappointing,[84] and the courts have been split as to their authority to grant relief in price squeeze situations.[85]

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82. After obtaining wheeling rights, the municipal electric system in Cleveland, Ohio, was able to purchase bulk power from two additional suppliers. It is now purchasing at wholesale from three different suppliers.

83. 426 U.S. 271 (1976).

84. Hjelmfelt, *A Price Squeeze Theory for Implementation of* Federal Power Commission v. Conway Corp., 50 U. COLO. L. REV. 459 (1979); *Report of the Committee on Antitrust*, 1 ENERGY L. J. 107 (1980); *compare* City of Bethany v. FERC, Docket No. 80-1633 (D.C. Ct. App. 1981).

85. *Compare* City of Mishawaka v. American Elec. Power Co., 616 F.2d 976 (7th Cir. 1980) (damages were awarded) *with* City of Newark v. Delmarva Power & Light Co., 467 F. Supp. 763 (D. Del. 1979) (antitrust damages not available).

## VII. CONCLUSION

In 1972, Richard Hellman wrote that the only successful regulation of electric utilities has been government competition and competitive interaction.[86] He concluded that the theory of natural monopoly, and the related theory that regulation by state commissions provides a legal substitute for competition, are incompatible with the facts. Based upon his case studies, he found that: "[U]tility managements, when exposed to government competition, have lowered prices and gained sales. More crucially, their finances have met the regulatory test of attracting capital for expansion. In a number of cases, rates of return have risen and exceeded those of comparable companies not under competition."[87]

The years since Hellman's study was published have confirmed his conclusions. However, there is no reason to limit competition to a struggle for customers between investor-owned and publicly-owned utilities. All utilities should be compelled to compete. Competition is not only practicable, but it promises to provide benefits not obtainable from regulation alone.

86. R. HELLMAN, GOVERNMENT COMPETITION IN THE ELECTRIC UTILITY INDUSTRY: A THEORETICAL AND EMPIRICAL STUDY 70 (1972).

87. *Id.* at 228.