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Natural Gas and Electric Utility Rate Reform: Taxation Through Ratemaking?

By Alfred C. Aman, Jr.*
Glen S. Howard**

I. Introduction

Electric and gas utility rates have risen dramatically in recent years. It has become almost an annual event that these utilities announce their intention to seek additional rate increases of greater and greater magnitude.1 These increases are occurring at a time when consumers are acutely aware of the limits of our energy resources. The combination of rising prices and decreasing resources has resulted in a variety of rate reform proposals, many of which advocate changes deviating significantly from traditional ratemaking approaches.

Historically, ratemaking has been synonymous with determining a utility's total average cost of service, including a reasonable rate of return on rate base, and matching these costs to the consumers who impose them. To determine these costs, regulatory commissions usually select a recent and presumably representative year of a utility's operations and compute the total costs incurred by the utility during that year in rendering the regulated service.2 These costs are said to consti-

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2. Traditionally, these costs have represented the utility's historic or embedded costs based on the previous year. Recently, however, commissions have frequently required that estimates for a future test period be included. See, e.g., Georgia Power Co.,
tute the company's "test year cost of service" and, in addition to a reasonable rate of return on rate base, form the company's revenue requirement. 3

Since utility revenue requirements are assessed on total average costs, utility rate structures traditionally are designed on the basis of average cost principles as well. Average cost rate structures, properly devised, seek to allocate the utility's revenue requirement so that the prices charged to consumers for services reflect only the actual costs the utility has incurred in providing those services. Such an approach would eliminate subsidization among customer classes and customers within a class by ensuring that all customers pay their own way. In so doing, a utility would recover its full costs—no more and no less. 4


The Federal Power Commission requires electrical utilities to file a cost of service for both the most recent twelve month period for which actual data is available and also an estimated cost of service for the twelve month period immediately succeeding the date on which the new schedule is to become effective. See 18 C.F.R. § 35.13(b)(1); Public Serv. Co. of Ind., No. 783, at 14-19 (FPC, Nov. 10, 1976); American Pub. Power Ass'n v. FPC, 522 F.2d 14 (D.C. Cir. 1975).

3. In general, state public service commissions regulate the profits of public utility corporations pursuant to statutory and sometimes constitutional guidelines. Most commissions are entrusted with the duty of setting "just and reasonable" rates. Such rates are to produce revenue equal to a utility's total cost of service including a reasonable rate of return on rate base. See, e.g., Md. Code Ann. art. 78, §§ 68-69 (1975 & Supp. 1976); Ga. Const. § 2-2401, Ga. Code Ann. § 93-309. Once the commission has determined what the company's overall revenue requirement shall be, the company then submits a schedule of rates designed to generate this amount of revenue in a manner which avoids "undue discrimination." These rate schedules or tariffs constitute public notice of the price that will be charged for the service of the utility. They usually are divided among at least three primary classes of retail customers: residential, commercial, and industrial. The relationship among the rate schedules for these various classes of customers and the amounts of revenue they produce is what is meant by the term "rate structure." The relationship of these rates within each class of customers often is referred to as "rate design." For a comprehensive discussion of the ratemaking process, see J. Bonbright, Principles of Public Utility Rates (1961) [hereinafter cited as Bonbright]; I A. Kahn, The Economics of Regulation: Principles and Institutions (1970) [hereinafter cited as Kahn]; 2 id. 1971); A. Priest, Principles of Public Utility Regulation (1969) [hereinafter cited as Priest]. See also Huntington, supra note 1, at 698-718; Jones, Judicial Determination of Public Utility Rates: A Critique, 54 B.U.L. Rev. 873, 874-94 (1974) [hereinafter cited as Jones].

4. The National Association of Regulatory Utility Commissioners has noted: "Electric rates should be based on the cost of service, and it is generally cheaper to serve larger customers than smaller customers. Cost of service rates are deemed generally to discourage the wasteful use of electricity, for they allocate to each customer the proper costs associated with his consumption of electricity. When rates are not based on the cost of service, some customers receive subsidized electricity at a price which is below the cost of production at the expense of others who pay a penalty."
Many of the reforms proposed today, both in the gas and electric utility industries, challenge these traditional ratemaking goals. Some reforms begin with the premise that the relevant costs for fixing rates are not the utility's average costs, but its marginal or long run incremental costs. Others, such as some versions of lifeline rates, reject outright the traditional notion that rates should be cost based for all consumers. These reforms illustrate a change in perspective, or at least in emphasis, as to what a rate is, what it should accomplish, and what the overall scope of the ratemaking process is or should be. For most reformers, rates constitute more than a just and reasonable *quid pro quo* for a utility's services: they are a social or economic tool which may, for example, promote conservation of gas or electricity, allocate decreasing gas supplies among competing consumers, lower peak demand for electricity, or provide relief for low income consumers. The end result of such a view is to broaden considerably the overall scope of the ratemaking process.  

Though most reform proposals purport to be cost based, implementing them usually results in wide deviations from whatever cost standard is employed. To the extent rates significantly depart from cost as the basic touchstone by which they are set, the ratemaking process becomes even more politicized and indeed, akin to taxation. As a result, rates paid by some consumers will be greater than the cost to the utility of providing service to them, while rates paid by other consumers will be substantially less than the utility's cost of providing that service. The determination of who subsidizes whom will in turn depend, to a large extent, on the political judgment (and perhaps the political aspirations) of regulators as well as the particular policy goals certain pricing techniques purport to encourage and

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It must be noted, however, that, as one commentator has stated, "the allocation of costs for purposes of rate design is both controversial and complex." Jones, *supra* note 3, at 889-90. Similarly, Professor Bonbright has observed that "the most that can be hoped for is the development of techniques of cost allocation that reflect only the major, more stable, and more predictable cost relationships." BONBRIGHT, *supra* note 3, at 297.


6. This is not to suggest that consumer groups with various points of view should not participate in the rate making process; however, without definable ratemaking standards of rate formulation, there will be no relatively objective way of reconciling the various components of the "public interest" represented by these groups.
regulators seek to advance. Such reforms thus constitute a form of taxation through ratemaking that leads to significant income redistribution among and within customer classes and may provide regulatory commissioners with virtually untrammeled discretion.

This article will examine some of the gas and electric utility reforms advocated today, with primary emphasis on those which deviate most sharply from traditional ratemaking approaches. The effectiveness of these reforms will be analyzed in terms of their expressed goals and the economic and legal consequences that are likely to result if they are implemented.

II. Electric Utility Rate Structure Reforms

Electric utility rate reform has recently received a great deal of attention.\(^7\) Various state commissions have conducted or are in the process of conducting generic rate design hearings focusing on the adequacy of the present rate structures of local utilities and a wide variety of proposed alternatives.\(^8\) Though retail electric utility rates traditionally have fallen within the exclusive domain of state regulatory commissions, some state legislatures and even Congress have recently taken

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7. See, e.g., Senate Comm. on Commerce, Natural Gas Act Amendments of 1976, S. Rep. No. 94-907, 94th Cong., 2d Sess. 6 (1976); Huntington, supra note 1; Samuelson, Battle Lines Are Being Generated for Reform of Electric Utility Rates, 8 Nat'l J. 1474 (1976). The primary catalyst for this attention has been rising electricity rates. Inflation, the rising costs of capital, fuel, labor, property taxes, and the like have contributed significantly to these rising rates. In addition, during these times of rising costs, the construction of new plants necessary to meet increasing peak demand for electricity as well as construction necessary to replace obsolete facilities also has contributed to both the frequency and the magnitude of electric utility rate increases. Furthermore, total capital requirements are expected to continue to spiral upward. The Federal Energy Administration, for instance, has estimated that yearly capital costs for the industry during the decade 1975-1985 will be three times the comparable costs in 1970. Myhra, The E-l-a-s-t-i-c-i-t-y Argument in Electricity Demand, Pub. Util. Fortnightly, Jan. 6, 1974, at 41-42; Willrich, The Electric Utility and the Energy Crisis, Part 1, Pub. Util. Fortnightly, Jan. 2, 1975, at 22, 25.

an active interest in this area. Numerous bills have been proposed dealing with various electric utility rate reforms.⁹

Most of the electric rate reforms currently advocated, either in legislatures or before commissions, attempt to accomplish one or more of the following objectives: overall reduction of the cost of electricity, reduction of the capital investment of electric utilities necessary to meet increases in peak demand, and promotion of energy conservation. In addition, some proposals have specific social welfare objectives as their primary goal. This section will analyze several of these reforms—specifically, marginal cost pricing, and inverted, flat, and lifeline rates.

A. Marginal Cost Pricing

Rates based on marginal cost attempt to reflect a utility's incremental (or decremental) cost of providing one more (or one less) unit of electricity at a given point in time.¹⁰ Such rates usually are combined with peak load pricing in the form of time of day and seasonal rates.¹¹ They attempt to reflect the difference in marginal cost to the utility of producing (or not producing) electricity at peak and off-peak


In addition, Title II of S. 2747, the Electrical Utility Rate and Structural Reform Act of 1975, required the FEA to submit to Congress a report by June 1976 analyzing various electric utility rate reforms. Similar legislation has been introduced, and in some instances enacted, by various states. North Carolina, for instance, enacted a statute in 1975 requiring its Public Utilities Commission to study peak load pricing and to examine various load management techniques. N.C. GEN. STAT. § 62-155(d) (Supp. 1975). See also Md. CODE ANN. art. 78, § 54E (Supp. 1976) (requires Public Service Commission to recommend rates that will encourage conservation). Several bills were introduced, but not enacted, in Maryland to establish peak period pricing or lifeline rates. See, e.g., H.B. 219; H.B. 735; H.B. 1017.


¹¹. Peak load pricing refers to the general concept of pricing electric service to reflect the higher cost of providing service during the utility's peak load periods. Seasonal pricing refers to the concept of pricing electric service to reflect the varying costs of providing service at different times during the year and time of day pricing reflects the varying costs of providing service at different times during the day.
times during the day and year. This approach thus provides an incentive which, it is hoped, will encourage a shift from peak to off-peak usage.

The implementation of time of day pricing, seasonal differentials, and other peak load pricing devices is, however, not at all dependent upon marginal cost pricing theory. Such devices also may be employed using average cost as the basis upon which rates are set. It may be argued that the differential between peak and off-peak rates that results from an average cost approach is not as great as the differential based on marginal cost, thus creating less of an incentive to shift use from peak to off-peak periods. Such considerations, however, depend primarily upon the demand elasticity of the consumers involved, not the particular cost philosophy used to develop the rates. This section, therefore, focuses on the legal and economic consequences of attempting to apply marginal cost pricing theory to the electric utility industry, rather than the potential benefits that may result if peak load pricing is implemented.

There are enormous definitional problems in determining what is and what is not a marginal cost. The definition varies with, among

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12. As one commentator has noted, "Peak-load pricing policies are in fact followed in jurisdictions using traditional average cost regulation. The method of costing is therefore basically irrelevant to the decision whether it is possible or desirable to charge more for peak usage than for off-peak usage and to adopt time-of-day and seasonal rates. Accordingly one may reject marginal cost pricing as a general method of regulation and still favor peak-load pricing and be perfectly consistent in doing so." Morton, Long-run Incremental Costs and the Pricing of Electricity, Part 1, PUB. UTILS. FORTNIGHTLY, Mar. 11, 1976, at 35. See also Rate Design for Elec. Corp., 15 P.U.R. 4th 434, 440 (N.Y. Pub. Serv. Comm'n 1976). The commission cited testimony in the case to the effect that: "[t]he application of marginal cost pricing principles to electric rates would require peak-load pricing, since the cost of supplying additional consumption ordinarily varies (whether little or much need not concern us at this point) by the time of day and season of the year. If we adopt the former, we must be prepared to adopt the latter. The converse, however, is not true: The case for rates varying with time of consumption is not dependent on the case for marginal cost pricing; it is possible to justify and base time-related rates on average costs, embedded costs, fully allocated costs, as well as marginal." Id. at 440 (testimony of Dr. Paul Joskow).


14. See, e.g., Melody, The Marginal Utility of Marginal Analysis in Public Policy Formulation, 8 J. ECON. ISSUES 287, 294 (1974) [hereinafter cited as Melody]. The author notes that, despite resort to definitional aids such as shortrun and longrun marginal costs by adherents of marginal cost pricing theory, "[t]he term marginal cost is
various factors, the time frame which is used to calculate marginal cost. A rate developed on the basis of short-run marginal costs assumes that the marginal unit of electricity is produced without any additions to existing plant and equipment. Thus, short-run marginal costs tend to be volatile and often fluctuate dramatically depending upon the relationship of current consumption to current plant capacity. Moreover, such costs give no indication either to consumers or to utilities of what future electricity costs are likely to be. Long-run marginal costs, on the other hand, are relatively more stable and take into account the need for new capacity. These costs usually are calculated by determining the rate of increased output over a span of several years so general that the variety of interpretations of its meaning is virtually infinite. The important issue in marginal analysis is always the selection of the alternative courses of action between which the marginal conditions will be measured.

"One is reminded of the story of the young man who told his father that he had walked home from school instead of taking the bus and saved $.25. The father replied that his son should have walked home instead of taking a taxi because then he would have saved $3.00. . . . Had the son evaluated the alternatives of taking the bus home instead of a taxi, he would have concluded that the marginal cost of taking a taxi was not $3.00, but $2.75. If he considered a limousine ride at $5.00, he would have concluded that the marginal cost relative to walking was $5.00; the marginal cost relative to taking the bus was $4.75; and the marginal cost relative to taking a taxi was $2.00. The marginal cost depends crucially on the relevant decision alternative that will not be followed. He who selects this decision alternative will determine the marginal cost. Clearly, public policies affecting vested interests cannot be based upon such subjective assessments by vested interests." Id. (emphasis in original). See also No. 6808 (Md. Pub. Serv. Comm'n, Feb. 9, 1976) (testimony of James Lim). Mr. Lim described the difficulty of determining what costs to include in calculating a marginal price. Because long term additions are instituted under different assumptions than intermediate or short term additions, and because construction occurs in irregular and often overlapping time frames, selection of the appropriate costs for "marginal" capacity costs are unclear. Allocation of other costs is similarly unclear. Mr. Lim testified, "Aside from production fuel-related costs, what are the marginal costs of operating and maintenance, labor, materials and supplies, customer accounting, administrative and general expenses, taxes, etc.? Should they be ignored or is a projected unit cost appropriate? If the latter, on what should such a projection be based? Do we go back to average costs to estimate marginal costs.

"The problem of correctly determining marginal costs is somewhat akin to serving a growing line of patrons from a continuously cooking stew pot to which new ingredients are constantly being added. If patrons pay in advance and inflation keeps raising the price of the ingredients being added, doubts arise as to how each patron gets what he paid for. The resulting mix becomes very difficult to distinguish in deciding which of the new ingredients should be assigned to new consumers when the service is being dispensed on a uniform basis from a common source." Id. at 38. But see No. 26806 (N.Y. Pub. Serv. Comm'n, June 30, 1975) (testimony of Charles H. Frazier), summarized in National Ass'n of Regulatory Utility Commissioners, Current Issues In Electric Utility Rate Setting, at A-60 to A-66, Apr. 13, 1976; Kahn, Economic Theory as a Guideline for Government Intervention and Control; 8 J. Econ. Issues 303, 305-07 (1974).

15. See Huntington, supra note 1, at 719-22; KAHN, supra note 3, at 70-83.
in the future.16 Because this approach results in rates which take into account a utility's future plans, most advocates of marginal cost pricing prefer to use a longrun standard.17 For practical and theoretical reasons, this results in an estimate of longrun incremental cost rather than longrun marginal cost.18

Regardless of the time frame used to calculate the relevant marginal costs, the theoretical basis for implementing marginal cost rates remains the same: rates equal to marginal cost maximize efficiency and result in an optimal allocation of society's scarce resources.19 As one commentator has explained:

If consumers are to make the choices that will yield them the greatest possible satisfaction from society's limited aggregate productive capacity, the prices that they pay for the various goods and services available to them must accurately reflect their respective opportunity costs; only then will buyers be judging, in deciding what to buy and what not, whether the satisfaction they get from the purchase of any particular product is worth the sacrifice of other goods and services that its production entails. If their judgments are correctly informed in this way, they will, by their independent purchase decisions, guide our scarce resources into those lines of production that yield more satisfaction than all available alternatives—which means that total satisfaction will be maximized.20

16. See Huntington, supra note 1, at 721.
17. See Kahn, supra note 3, at 83-86.
18. As one commentator has noted, "Strictly defined, LRMC [long-run marginal cost] is the cost of an additional single unit of capacity. Obviously, electric utilities add capacity in large chunks and there is no meaningful measure of the cost of a single unit. Accordingly, the concept of long-run incremental cost (LRIC) was developed as a surrogate or approximation of long-run marginal cost. Roughly speaking, long-run incremental cost is computed on the basis of increments of the size that the utility would normally plan. L. Flax & M. Drazen, CURRENT PROPOSALS FOR CHANGES IN THE DESIGN OF ELECTRIC UTILITY RATES 56 (1976) [hereinafter cited as FLAX & DRAZEN]. See also Rate Design for Elec. Corp., 15 P.U.R. 4th 434 (N.Y. Pub. Serv. Comm'n 1976) (testimony of Dr. William H. Melody), reprinted in NATIONAL CONSUMER INFORMATION CENTER, HANDBOOK FOR CONSUMER ADVOCATES: ELECTRIC UTILITY RATE PROCEEDINGS 393 (1976) [hereinafter cited as HANDBOOK]. Dr. Melody argues that longrun incremental cost when defined as "a selected average unit cost of the capacity and output that a utility plans to add over the next decade or so" is not an appropriate marginal cost according to the criteria of economic theory. Id.
19. Utility rate structures traditionally have had three primary objectives: the collection of the utility's revenue requirement, the fair apportionment of a utility's costs among and within its various customer classes, and the promotion of economic efficiency. See Bonbright, supra note 3, at 291-93; Priest, supra note 3, at 329. Marginal cost pricing focuses on the third objective—economic efficiency—and pays little or no attention to the first two. Indeed, most marginal cost proponents believe that the revenue requirement is taken care of by certain adjustments to marginal cost rates, and that fairness is synonymous with economically efficient rates. See note 27 & accompanying text infra.
Marginal cost pricing theory has long been accepted by most economists; however, its general application in the "real world" and, specifically, to the electric utility industry requires so many compromises of the underlying theory that it is difficult to discern what, if any, advantages are to be gained by implementation of this approach. Assuming for the sake of argument that marginal costs can and have been adequately defined and measured, certain assumptions must be made concerning the economy in general. For example, marginal cost pricing produces an optimal allocation of resources only if all goods in the economy are priced at their marginal cost. This gives rise to what has been called the "problem of the second best" which, as one commentator has noted,

is obviously a very serious one in an economy shot through with imperfections of competition, monopoly power, and government taxes and subsidies, causing all prices to diverge in varying directions and degrees from marginal costs.

In addition, such an approach assumes perfect knowledge on the part of all consumers and accepts as optimal the particular income distribution that results when all goods are priced at their marginal cost.

Quite apart from the compromises necessitated by pervasive imperfections in the economy in general, the legal framework within which utilities must operate necessitates a further compromise: given the fact that, by statute, utilities can recover only their actual cost of service,

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21. See, e.g., Rate Design for Elec. Corp., 15 P.U.R.4th 434 (N.Y. Pub. Serv. Comm'n 1976). The opinion quotes Dr. Paul Joskow as follows: "There is, I submit, no real argument about whether marginal cost pricing is right or wrong. If our goal is economic efficiency, it is almost definitional that the prices of commodities must reflect the marginal social cost of supplying these commodities." Id. at 440.

22. Just what is and what is not a marginal cost is exceedingly difficult to determine. Resolving such problems substantively broadens the scope of regulators' discretion. One authority has said, "In the final analysis, it must be recognized that marginal costs (as well as revenues) are entirely bound up on the personal judgment of the analyst, the 'arbitrary' decisions that he makes in defining his problems, and his changing expectations." Rate Design for Elec. Corp., 15 P.U.R.4th 434 (N.Y. Pub. Serv. Comm'n 1976) (testimony of Dr. William H. Melody), reprinted in HANDBOOK, supra note 18, at 406. But see Current Issues In Electric Utility Rate Setting, at A-80 to A-83, Apr. 13, 1976 (testimony of Sally Streiter).

23. Kahn, supra note 3, at 69. Professor Kahn, however, goes on to conclude: "In the author's view in principle it does not make solution impossible in specific situations, nor does it make it practically impossible in such instances to make the type of informed piecemeal decisions policymakers must inevitably make about how far and in what directions to qualify the basic rule of marginal-cost pricing." Id. at 70. But see Melody, supra note 14, at 297; Melody, Interservice Subsidy: Regulatory Standards and Applied Economics, in ESSAYS ON PUBLIC UTILITY PRICING AND REGULATION 167, 182-83 (H. Trebling ed. 1971).

24. See Kahn, supra note 3, at 70.
including a reasonable return on rate base,\textsuperscript{25} it simply is not possible to establish a rate structure that charges each consumer a rate equal to marginal cost. The following example illustrates why this is so.

In the operation of an electric system, a utility tries to minimize its costs. This is done by operating its lowest cost generation units first and then, step-by-step, adding higher cost units as system requirements dictate. At any given moment, a large part of the energy production is from relatively efficient base load units with low overall costs, another portion is from intermediate units with somewhat higher overall costs and another component is from peaking units with the highest overall costs. As many commentators have noted, under today's conditions of rising costs, marginal costs are usually above average costs. Thus, the marginal cost of producing a kilowatt hour at peak periods during the day, for example, may be five cents due to the fact that high cost peaking units are employed; but the average cost may be only two cents per kilowatt hour because the cost of these units must be averaged with lower cost base load generators and intermediate units.\textsuperscript{26}

A customer who is being served during any given hour is using not only marginal kilowatt hours but a mix of all of the kilowatt hours produced on the system at that hour. Thus, the utility's actual cost of producing electricity is the average cost of serving that customer rather than the marginal cost; however, if a customer is charged the marginal cost of five cents per kilowatt hour for all kilowatt hours consumed during the peak period of the day, rather than the average cost of two cents per kilowatt hour, the consumer pays three cents more than the utility's cost of service. The total revenue collected by such rates would thus be substantially above the actual costs incurred by the utility. And indeed, the initial rate, prior to any adjustment, would be above the "just and reasonable" rate that would be charged in collecting the actual costs incurred by the utility, plus a reasonable rate of return. Alternatively, if the marginal cost rate is below average cost, the rate set would be below the just and reasonable standard, would result in an undercollection of revenue, and, in effect, would constitute a confiscatory rate.

Various adjustments have been proposed to make the revenue collected by marginal cost rates conform to the utility's revenue require-


\textsuperscript{26} See, e.g., Morton, Long-Run Incremental Costs and the Pricing of Electricity, Part I, PUB. UTILS. FORTNIGHTLY, Mar. 11, 1976, at 34. Though the example in the text is based only on marginal generation costs, it is likely that even with the inclusion of transmission and distribution costs, marginal costs would still exceed average costs.
ment. The rates which result after these adjustments have been made, however, deviate considerably from marginal cost. Indeed, there is little to suggest that such compromised "marginal cost" rates allocate resources any better than average cost rates. Moreover, the various methods of making these necessary adjustments introduce additional difficulties. As one commentator has stated, or perhaps understated: "The question how these adjustments should be made presents one of the most intriguing challenges to advocates of marginal cost pricing."

1. Adjustments to Marginal Cost Rates

The most direct approach to the "excess-deficit revenue" problem created by marginal cost rates is simply to provide a direct subsidy to the utility in the event of a revenue deficit or to tax away the surplus in the event of an excess. This approach, however, has been rejected primarily because the power to levy a tax or to allocate funds from the state's general fund is clearly beyond the powers of state regulatory commissions. In addition, as Professor Bonbright has explained:

[Q]uite aside from . . . considerations of income-distributive justice, there are serious political objections to wholesale extensions of public subsidies: namely, that legislative grants of subsidies come so largely through the efforts of pressure groups and of regional interests which are under little impulse to weigh the benefits to themselves against the costs to other people.

Similar problems result from the application of other commonly proposed adjustments to marginal cost rates. As will be shown below, common proposals such as inframarginal and inverse elasticity of demand adjustments, in practical effect, also result in a form of taxation for some consumers, significantly redistribute income within and among customer classes, and raise serious questions of legal and economic discrimination.


28. See Proposed Order of Hearing Examiner, No. 6808, at 13-16 (Md. Pub. Serv. Comm'n, Mar. 18, 1977). This order was issued subsequent to the preparation of this article. See generally Melody, supra note 14, at 290-93.

29. Huntington, supra note 1, at 739.


31. BONBRIGHT, supra note 3, at 398.
a. The Inframarginal Approach

An inframarginal charge is a charge "for that part of a consumer's total consumption of electricity that is unaffected by decisions at the margin to expand or curtail consumption." Although such adjustments result in rates which do not equal marginal cost, the theoretical justification of such an approach is that the deviation from marginal cost that occurs does not destroy the proper marginal cost pricing signal to the consumer. One commentator has explained that this is because the basis for this approach is the assumption that consumers determine whether to increase or curtail their consumption at the margin, i.e. that their decision is based on the price they must pay for an additional unit of electricity or the amount they save by cutting back their consumption by one unit, not by the total amount of their bills. By adjusting charges for earlier inframarginal consumption only, the total bill or amount of revenue received by the utility is adjusted up or down without altering the amount of electricity consumed by the particular customer.

An example of the practical application of this approach is a rebate or surcharge calculated on a per customer basis. Assuming, as is likely, that marginal cost rates yield more than the utility's revenue requirement, the resulting surplus would be divided by the number of customers on the utility's system. The amount of the resulting "dividend" would then be applied to all customers equally, independent of the differences in usage characteristics of consumers. To ensure that the resulting rebate would not, at least theoretically, affect energy consumption, it has been proposed that this dividend be credited to the fixed customer charge component of the rate. By so doing, the energy component of the rate, which theoretically equals marginal cost, would remain unchanged.

This approach has two major weaknesses. First, it assumes that a consumer is more concerned with the actual kilowatt hour rate that is paid, rather than the total bill; however, even though the specific amount of the customer rebate is applied to a presumably inframarginal

32. Huntington, supra note 1, at 742, n.265.
33. Id. at 742.
34. See Case No. 6808 (Md. Pub. Serv. Comm'n, Feb. 9, 1976) (testimony of Dr. John Boland). For another example of an inframarginal approach, see Huntington, supra note 1, at 742, n.267.
35. As Dr. Boland noted: "[A]n acceptable and straightforward method of adjusting the total revenue to equal any desired sum is to apply a uniform charge or credit to each customer bill. This has the effect of modifying the customer charge . . . and, so long as the adjustment is of comparable or smaller magnitude as the customer charge, very little incentive distortion can be expected from this method." No. 6808 at 22-23 (Md. Pub. Serv. Comm'n, Feb. 9, 1976) (testimony of Dr. John Boland).
portion of the bill, the end result is a reduction in total bill. As the following example illustrates, the percentage reduction that results from a per customer inframarginal adjustment varies with the size of each consumer's total bill and, in many instances may reasonably be assumed to constitute a significant incentive to consume more electricity. Second, and more important, this approach results in rates which have significant income redistributive effects and are discriminatory from an economic point of view and quite possibly from a legal point of view as well.

Assume, for example, that marginal cost rates generate an excess of revenue that, under the per customer approach, requires a monthly per customer rebate of two dollars. A small residential user with a monthly bill of twenty dollars and a large industrial user with a monthly bill of $100,000 would receive the same rebate: two dollars. Obviously, the impact the rebate would have on their respective bills differs significantly between these two users. For the small residential user, a two dollar rebate represents a 10 percent reduction in total bill; for the large user, the reduction is negligible. It may be assumed that, even though the kilowatt hour rate remains the same, a 10 percent reduction in total bill would constitute an incentive to the residential user to consume more electricity.

Moreover, though the two dollars is presumably credited to the customer charge, both bills deviate from marginal cost, albeit to differing degrees. The small user pays a total bill which is 10 percent less than an unadjusted marginal cost bill. The large user pays a total bill virtually equal to the marginal cost rate. Even assuming that an optimal income distribution occurs when all electric utility consumers pay a rate equal to marginal cost, it is clear that within the marginal cost framework itself, this results in a shift of income responsibility from smaller users to larger users.

Given that the goal of marginal cost

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36. As Professor Huntington has noted, "The amount by which inframarginal charges could be altered without affecting the customer's total consumption would, of course, depend upon the value placed by that customer on the consumption of any electricity." Huntington, supra note 1, at 742.

37. The income redistribution effects of a pure marginal cost pricing approach as compared to an average cost approach can also be significant. See No. 6808 (Md. Pub. Serv. Comm'n, Feb. 9, 1976) (testimony of Donald Huber, Richard De Muth, S.J. Campbell & Armin Wille). Such rates would result in approximately a 35% increase over and above average cost rates for the same revenue level for these industrial users, assuming little or no change in their daily operations. The impact could be less for those who do not run both day and night shifts, but the labor costs of shifting to a night schedule could be prohibitive.
pricing is the optimum allocation of resources, and given that this results when all rates for all consumers are priced at marginal cost, there would appear to be no theoretical justification for providing a relatively pure pricing signal for large users of electricity and a substantially compromised pricing signal for small users of electricity.38 In short, the irony of such an inframarginal approach is that, while purporting to treat all customers alike, the per customer adjustment results in arbitrary deviations from marginal cost rates that constitute a form of economic discrimination and, as will be discussed below, perhaps legal discrimination as well.39

b. Inverse Elasticity of Demand

In contrast to the arbitrary deviations from marginal cost that result from the inframarginal approach discussed above, distributing excess revenue or collecting a deficit in accordance with the inverse elasticity of demand approach results in adjustments only for those consumers whose demand for electricity is deemed least responsive to price. The deviation from marginal cost that results theoretically would have little impact on the pricing signal received by these consumers and thus, would have little impact in terms of allocative efficiency. Customers with price elasticity, on the other hand, would not receive a rebate, since deviations from marginal cost rates would affect their consumption pattern and compromise or destroy the correct marginal cost pricing signal. This approach, its proponents argue, compromises marginal cost prices in a way which has the least impact in terms of the fundamental purpose of the rate.40

38. It may be argued that this is in accord with a rough approximation of the demand elasticity of large users as opposed to smaller users. Such an assertion, however, is based on demand elasticity studies, the reliability of which have been seriously questioned. See note 42 & accompanying text infra.

39. Professor Kahn has defined rate discrimination in the economic sense as "charging different purchasers prices that differ by varying proportions from the respective marginal costs of serving them." KAHN, supra note 3, at 123. See also BONBRIGHT, supra note 3, at 372-78.

40. See Huntington, supra note 1, at 742-46; Kahn, Between Theory and Practice: Reflections of a Neophyte Public Utility Regulator, PUB. UTILS. FORTNIGHTLY, Jan. 2, 1975, at 29, 32; Reform of Electricity Pricing, supra note 27, at 203. Testifying before the Public Service Commission of New York, Louis A. Guth stated: "Once costs are determined, however, price elasticity may play a major role in the design of rates based upon those costs. This is, of course, a reference to the so-called 'inverse elasticity rule. . . .' In other words, the relative difference between price and incremental cost should vary inversely with the elasticity of demand. The reason is that the inefficiency resulting from the requirement that the rates fall below incremental costs will be greatest for the most elastic demand; where, at the other extreme—demand is completely insensitive
Quite apart from the fairness of charging one consumer a rate based on marginal cost and another a rate that may deviate substantially from this standard, there exists a fundamental practical difficulty with this approach—the virtual impossibility of presently determining, in any meaningful way, the elasticity of demand among and within customer classes. As one commentator has noted, "the implementation of discriminatory rates based on elasticities of demand requires much more information on relative elasticities than is currently available; at present, only crude judgments on relative elasticities are possible." Given the present state of the art, any judgment as to which customer classes and which customers within a class are demand elastic and which are not would provide commissioners with broad discretion to charge some consumers a rate based on marginal cost and others a rate that deviates considerably from this standard. Indeed, unlike the subsidization that results from the mechanical application of a per customer adjustment, the subsidization that results from this approach would, in effect, be determined by the social and political goals of the regulators involved.

c. The Equal Percentage Approach


42. Huntington, supra note 1, at 743. See also Grainger, A Practical Approach to Peak-Load Pricing, PUB. UTILS. FORTNIGHTLY, Sept. 9, 1976, at 19, 20. See also Caywood, Electrical Utility Ratemaking—1974, PUB. UTILS. FORTNIGHTLY, Dec. 5, 1974, at 34, 37-38 [hereinafter cited as Caywood]; Cohn, Should Utility Rate Structures Be Revised To Discourage Electric Use, PUB. UTILS. FORTNIGHTLY, at 21, 23 [hereinafter cited as Cohn].

43. At least one commentator has argued that where excess revenue results, the exercise of such discretion would be appropriate. See Huntington, supra note 1, at 744-46. However, this may result in discretion which is effectively beyond judicial review and rates which depart significantly from the marginal cost standard, thus constituting undue discrimination. See note 47 & accompanying text infra. Another commentator has noted that a "pramatic test of a general theory is to see whether its proponents are willing to practice it under all circumstances and conditions no matter where it may lead." Morton, Long-Run Incremental Costs and the Pricing of Electricity, Part I, PUB. UTILS. FORTNIGHTLY, Mar. 11, 1976, at 34. Application of this test when all consumers are paying a rate equal to marginal cost and a revenue deficit results raises different political, economic and social considerations. In such an instance, the exercise of such discretion has been rejected. See Huntington, supra note 1, at 744.
the utility's revenue requirement. For example, if marginal cost rates resulted in a 10 percent excess of revenue, a customer paying a monthly bill of twenty dollars would receive a two dollar rebate, and a customer paying a monthly bill of $100,000 would receive a $10,000 rebate. Since all consumers would deviate from marginal cost to the same degree, economic discrimination would be eliminated; however, in terms of marginal cost pricing theory, the pricing signal provided by the rate would be significantly compromised. Indeed, a percentage reduction tends to bring rates back to a point which approximates average cost.\textsuperscript{44} It does not appear that such a rate substantially furthers the goal of allocative efficiency which underlies the theoretical basis of marginal cost pricing. Moreover, setting average cost rates in so circuitous a fashion would appear to be an unnecessary administrative exercise.\textsuperscript{45}

In summary, it is not possible to charge all consumers a rate equal to marginal cost. Rates based on marginal cost do not track the costs actually incurred by the utility, and, as a result, may yield more or less revenue than the utility is entitled to collect. A system of rebates or surcharges therefore becomes necessary. Such adjustments result in rates which substantially compromise the marginal cost theory upon which they are based and, with the exception of rates which result from the equal percentage adjustment, are discriminatory from an economic point of view. Whether such discrimination is "undue" and thus discriminatory from a legal point of view is a separate question.\textsuperscript{46}

\textsuperscript{44} Three-part marginal cost rates with separate demand, energy, and customer components that are each reduced by a percentage developed separately for each component result in rates that precisely equal average cost. Rates in which all components are reduced on an equal percentage basis would be distorted somewhat, but nonetheless closely approximate average cost.

\textsuperscript{45} See generally Melody, supra note 14, at 290-93.

\textsuperscript{46} It is important to note that the problems that arise from either an overcollection or undercollection of revenue have not been adequately addressed by commissions that have ordered either the implementation or further study of marginal cost pricing proposals. For example, Madison Gas and Electric Gas Co., 5 P.U.R.4th 28 (Wis. Pub. Serv. Comm'n 1974), has been hailed as a landmark case and the harbinger of a new approach to rate reform, as it is the first decision applying marginal-cost pricing to utility rate design. See, e.g., Cudahy & Malko, Electric Peak-Load Pricing: Madison Gas and Beyond, 1976 Wis. L. REV. 47; Cudahy, Rate Redesign Today: The Aftermath of Madison Gas, PUB. UTILS. FORTNIGHTLY, May 20, 1976, at 15. In the Madison Gas proceeding, however, the commission did not have to deal with the excess-deficit problem because the utility's revenue requirement was fortuitously equal to the amount of revenue produced by long-run incremental cost rates. As Commissioner Cudahy noted in his concurring opinion: "We may only hope that, in addition to being fortuitous, this equivalence is well-founded.

"In any event, this equivalence eliminates the need in this case for making appropri-
2. **Undue Discrimination**

In addition to setting "just and reasonable" rates that generate sufficient revenue to meet a utility's revenue requirement, regulatory commissions must allocate this revenue responsibility fairly among and within the various customer classes. Most commissions are entrusted with the statutory duty of setting rates which avoid "undue discrimination." Regretably, neither commissions nor reviewing courts have ever made particularly clear what constitutes "due" as opposed to "undue" discrimination. In general, courts have viewed ratemaking as a quasi-legislative function and have granted regulatory commissions considerable discretion in setting rates. As a consequence, no well-
defined judicial guidelines have emerged for determining whether such rates are, in fact, unduly discriminatory.

Allegations of undue discrimination made by a class of customers or customers within a class often have been resolved by application of a constitutionally derived rational basis test. Simply put, this test would uphold the rate structure established by a commission unless a complaining party was able to show that there was no substantial evidence on the record which could be said to constitute a rational basis for the particular disparity in the rates complained of. Although various courts and commissions have recognized that cost is not the only factor to be considered in devising a proper rate structure, it may be argued that a more meaningful formulation of this standard is as follows: A disparity in the rates charged consumers is justified unless it can be shown that there is no substantial evidence on the record supporting those factors which constitute a rational basis for charging consumers a rate that deviates from cost, however cost be defined. This standard is broad enough to allow for the consideration of noncost factors in devising a rate structure and thus does not significantly limit a commission's discretion. The standard, however, would require that these factors be specifically articulated by the commission and that the extent of the deviation from cost based rates for which they account be supported by evidence on the record. As a corollary to this approach, it should also be required that the particular noncost factors involved be "reasonably" or "rationally related" to the overall purpose of the proposed rate structure.

50. See, e.g., Allied Chem. Corp. v. Georgia Power Co., 236 Ga. 548, 224 S.E.2d 396 (1976). The court said, "Because rate making is a legislative act, our test under an equal protection analysis of this economic regulation matter is whether there was a rational basis for the differing rate treatment of the complaining industrial class vis-à-vis other classes, and the rate must be approved unless we find it to be without a rational basis." Id. at 552, 224 S.E.2d at 399.

Other courts have applied tests which appear functionally similar to the rational basis standard without, however, labeling them as such. See, e.g., St. Michael Util. Comm'n v. FPC, 377 F.2d 912 (4th Cir. 1967); Jarrett v. City of Boston, 209 Ga. 530, 531, 74 S.E.2d 549, 551 (1953). See generally BONBRIGHT, supra note 3, at 369-85; PRIEST, supra note 3, at 285-326.


A flexible cost standard such as this would provide a reviewing court, as well as the participants in a rate proceeding, with a relatively objective touchstone by which to gauge the fairness of the resulting rates. Indeed, without such viable standards, judicial review of the substance of a rate structure, as distinguished from review of the procedure by which it was developed and enacted, would be relatively meaningless. The broad discretion which regulatory commissions have and should exercise would become virtually total. As Justice Jackson observed long ago, "If we are to hold that a given rate is reasonable just because the Commission has said it was reasonable, review becomes a costly, time-consuming pageant of no practical value to anyone."55

Using the above cost based standard to judge the validity of the rates that result after application of the above per customer and inverse elasticity of demand adjustments raises serious legal discrimination questions. Rebating a revenue excess on a per customer basis results in rates charged to customers that deviate from marginal cost in varying degrees, depending upon the amount of electricity consumed—i.e., customer size. Given the primary purpose of marginal cost pricing—the efficient allocation of society's resources—a strong argument can

granting or denying benefits under the Louisiana wrongful death statute, the Court asked whether such a distinction had a rational relationship to the purpose of the act involved. By analogy, given that an order devising a rate structure is quasi-legislative in nature, a court might legitimately inquire whether the derivation in cost that may result is rationally related to the overall purpose of the rate reform or structure to be implemented.

54. A number of appellate cases deal solely with the procedures used by a commission in setting rates and do not deal with the impact of the rates themselves. See generally Note, The Emerging Constitutional Issues In Public Utility Consumer Law, 24 U. Fla. L. Rev. 744 (1972).

55. FPC v. Hope Natural Gas Co., 320 U.S. 591, 645 (1944). It may also be argued that a cost based standard is required when applying the statutory standard of "undue discrimination" to the resulting rates set by a state commission. This is because the discretion granted to a commission under the statutory provisions by which it is governed arguably does not extend as far as the limits of state and federal constitutional equal protection. Thus, application of a broad based rational basis test, though appropriate for the results reached by a legislature, arguably is not appropriate for the results reached by an administrative body whose actions must conform to certain statutory limits. This argument would apply especially to rates set by commissions whose members are appointed rather than elected. For cases applying a statutory rather than a constitutional standard see e.g., Northern Natural Gas Co., 14 F.P.C. 11 (1955), aff'd sub nom. Interstate Power Co. v. FPC, 326 F.2d 372 (8th Cir. 1965), cert. denied, 352 U.S. 967 (1957); Coffelt v. Arkansas Power & Light Co., 248 Ark. 313, 451 S.W.2d 881 (1970); Missouri ex rel. City of West Plain v. Public Serv. Comm'n, 310 S.W.2d 925 (Mo. 1958); Public Serv. Co. v. State, 102 N.H. 150, 153 A.2d 801 (1959); State ex rel. Util. Comm'n v. North Carolina Consumers Council, Inc., 18 N.C. App. 717, 198 S.E.2d 98 (1973).
be made that size alone does not constitute a rational basis that would justify rates which deviate in varying degrees from marginal cost. Indeed, at least within the confines of pure marginal cost pricing theory, there would appear to be no justification for the pricing signal to be relatively pure for large users but increasingly compromised for smaller users. Although an argument may be made based on the administrative convenience of such an approach, the fact remains that the resulting rates deviate from marginal cost in an arbitrary manner wholly unrelated to the basic goal of marginal cost pricing.56

Adjustments made in accordance with the inverse elasticity of demand approach, at least theoretically, ensure that the marginal cost pricing signal is compromised in a manner that does the least harm to the overall goal of the rate structure. The variances from marginal cost evinced by the resulting rates are, in fact, occasioned by factors rationally related to the goals of marginal cost pricing. Assuming that economic efficiency can be equated to fairness, such an approach theoretically would constitute a rational basis for the disparity. As noted above, however, in practice such decisions most likely would turn on whether the demand elasticity studies which purport to account for these variances constitute sufficient evidence upon which to base such differences in rates. Since the present state of the art makes it unlikely that such studies can reliably justify the resulting variances, a broader issue presents itself: can regulators' political and social goals that are unrelated to the goals of marginal cost pricing theory constitute the primary basis for deciding which consumers shall benefit or be burdened by a revenue excess or deficit?

As noted above, it may be argued that consideration of noncost factors is incongruous within a marginal cost framework. The primary purpose of such a rate structure is to maximize economic efficiency. Adjustments that are unrelated to that goal would be counterproductive and would raise, as a serious question, why marginal cost pricing was used in the first place.57

Nevertheless, given judicial deference to the broad discretion exercised by regulatory commissions, it is most likely that a reviewing court

56. Similar considerations apply when there is a deficit and a surcharge is in order. However, in addition to the fact that the degrees to which some consumers' rates would exceed marginal cost would differ, there is the added fact that such a surcharge would arguably constitute a users' tax. As noted earlier, the power to tax is beyond the authority of state commissions. See note 30 & accompanying text supra.

57. The potential benefits of peak load pricing, consideration of future costs in setting present rates, and even the flattening of declining block rate structures all can be accomplished within the bounds of traditional average cost pricing philosophy.
would allow the use of noncost factors in adjusting marginal cost rates. A narrower question is thus presented: is there any limit to the type of noncost factors that can be considered in setting discriminatory rates?

Consideration of a noncost factor such as conservation is clearly within the scope of the ratemaking process. Though energy conservation is, perhaps, best and most equitably achieved when rates are based on cost, it is a rational energy policy goal that should be within the scope of a commission’s expertise and authority. Noncost factors such as ability to pay, however, involve a commission in a determination of the social and economic welfare of some consumers. Such noncost factors, it may be argued, traditionally have not played a significant role in the ratemaking process, are unrelated to any specific energy policy goals, and are beyond the authority of most regulatory commissions.

In either case, the discretionary power that results from reliance on such factors in setting rates is akin to the power to tax. Whether there exists a revenue excess or deficit, the commission must allocate this excess (akin to a general fund) by way of a negative tax or must impose a surcharge (a direct tax) on some consumers either to achieve certain energy related policy goals, a redistribution of income, or both. In the final analysis, the rates established constitute a disguised form of public financing in which some consumers subsidize others an attempt to achieve certain policy goals that may or may not be achieved in an unregulated market.

Arguably, the power to tax in this manner, though limited solely to taxation of electricity users, is beyond the statutory authority of a

58. Conservation, however, is not a factor to be considered under the Natural Gas Act. See notes 168-69 infra.

59. Case No. 6808 (Md. Pub. Serv. Comm’n, Feb. 9, 1976) (testimony of James Lim, at 11-12). Mr. Lim notes that conservation can be defined in a number of ways and thus introduces a high degree of subjectivity into the ratemaking process. Mr. Lim thus concludes: “As to the effort to achieve energy conservation through ‘innovative’ designs of electric utility rates, I doubt the feasibility and desirability of any approach for using drastically ‘new’ or different rate forms. The ‘new’ alternatives proposed in this case, as well as elsewhere, reflect arbitrary treatments of rates in various respects including disregard for actual costs and seem to rely on the philosophy that the ends justify the means—i.e., the rates will, by coercion, result in the desired energy conservation.” Id. See also id. (testimony of David T. Helsby, at 5-6).

60. These arguments are similar to those made against the institution of lifeline rates. See also Madison Gas & Elec. Co., 5 P.U.R.4th 28, 38 (Wis. Pub. Serv. Comm’n 1974); KAHN, supra note 3, at 130. For further discussion, see notes 93-108 & accompanying text infra.

commission and, in effect, constitutes an undue delegation of the legislative taxing power to an administrative body.

Assuming, however, that such taxation is upheld as an appropriate exercise of a commission's discretion, this discretion would be incapable of effective judicial review, unless the reasons for significant deviations from cost based rates are articulated and supported by evidence on the record. For example, if it is contended that rebating a revenue excess on a per customer basis is justified because it encourages conservation, there should be record evidence to support the proposition that large users of electricity are less efficient than small ones and thus should pay the higher marginal cost rate. Similarly, assuming that social welfare goals can be considered in setting rates, justifying a per customer rebate on grounds of ability to pay should require, at a minimum, evidence on the record showing a significant correlation between income and energy usage. On the same basis, a rebate to small users because their level of use is presumably the least affected by price changes should be supported by appropriate demand elasticity studies. In short, if commissions set rates which deviate from whatever cost standard is used, failure to articulate and substantiate, with evidence on the record, the noncost factors relied upon and their relevance to the policy goal that is sought will effectively immunize the resulting rates from judicial review. What constitutes "undue" discrimination will consequently remain an unanswered question.

B. Inverted, Flat, and Lifetime Rates: Alternatives to the Declining Block Rate

A major goal of many electric utility reforms is elimination of the declining block rate structure. The declining block rate traditionally


63. In a similar vein, Professor Posner has recommended that "agencies and reviewing courts insist, in proceedings where the maintenance of an internal subsidy is an issue, that the amount and cost of the subsidy, together with the identity of the recipients and of the payors, be calculated and placed in the public record. Perhaps this would eliminate some of the more captious instances of the phenomenon; at least it would bring an important issue of public policy into the open." Posner, supra note 61, at 47. See also FPC v. Texaco, Inc., 417 U.S. 380 (1974); Hawaiian Tel. Co. v. FPC, 498 F.2d 771 (D.C. Cir. 1974).

64. Even if such a correlation does exist, however, low income consumers who use more than a subsistence amount of electricity will be subsidizing those consumers—both low income and otherwise—who use a minimal amount of electricity. See text accompanying notes 102-04 infra.

65. See Caywood, supra note 42, at 34; Cohn, Current Proposals In Rate Design.
has been used as a means of recovering a utility's cost within the various customer classes, particularly the residential class. This rate charges a lower kilowatt hour price for additional increments of electricity. Despite the fact that there are cost based reasons for this result, critics of this approach claim that declining block rates promote the wasteful use of electricity, provide large users with unjustified volume discounts, and are wholly inappropriate for an economy characterized by rising costs. In place of declining block rates, some reformers propose either inverted or flat rates.

1. Inverted Rates

Inverted rates increase the price per kilowatt hour of electricity as consumption increases. This approach is often combined with a form of long-run incremental cost pricing. The utility's revenue requirement is allocated among the customer classes in accordance with a standard cost allocation approach; however, the rates established, at least in the tailblock of the residential rate, are based on an estimate of the utility's long-run incremental cost. Since these costs presently are rising, this rate, as noted above, is likely to produce excess revenue. Reducing the rate in the preceding blocks is, in effect, another way of rebating excess revenue. The end result is an inverted rate struc-

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66. See NARUC REPORT, supra note 4, at 10.
69. For a discussion of various inverted rate proposals made before the California commission, see Case No. 9804, Decision No. 85559, CALIFORNIA PUBLIC UTILITY COMMISSION, OPINION AND FINAL REPORT TO THE LEGISLATURE PURSUANT TO ASSEMBLY CONCURRENT RESOLUTION NO. 192, at 18-25 (Oct. 1, 1974).
71. Though there are many methods of allocating a utility's joint expenses or demand related costs, three methods or variants thereof often used are the peak responsibility method, the noncoincident peak responsibility method, and the average and excess demand approach. For a discussion of these approaches, see J. DORAN, F. HOPPE, R. KOGER & W. LINDSAY, ELECTRIC UTILITY COST ALLOCATION MANUAL 40-53 (1973); CAYWOOD, supra note 4, at 146-72.
ture with a tailblock rate based on long-run incremental cost and an initial block rate below average cost, constituting, in effect, a lifeline rate.

Proponents of this approach argue that the resulting rate structure is, in fact, cost based. A major reason for the rate increases recently sought by utilities, it is contended, is growth in energy use which, in turn, has led to growth in peak demand. Since economies of scale, at least as to the generation of electricity, have been exhausted, this has created the need for new, higher cost facilities. This requires additional capital, which, in turn, necessitates additional rate increases. Advocates of inverted rates claim that a rate which increases as consumption increases places the burden of such rising utility costs on those allegedly most responsible for this upward spiral—large volume users of electricity. Thus, it is argued, inverted rates are cost based.

Such arguments, however, have as their basis a number of assumptions which are not likely to be supported by the evidence: (1) higher costs resulting in rate increases are attributable primarily to growth in energy consumption; (2) such growth occurs principally through increased consumption by customers purchasing energy in the tailblock of the rate; and (3) tailblock energy growth is primarily responsible for growth in peak demand. In the first instance, increased costs leading to filings for rate increases result from many factors in addition to the cost of providing additional capacity. Principal among these are increases in the cost of capital, property taxes, fuel costs, and labor. None of these increased costs is necessarily related to providing additional capacity, and all can easily result in the need for increased rates even in the absence of any growth. Second, growth in energy usage does not occur solely through customers using additional energy in the tailblock of the rate. As a matter of fact, growth in energy most likely occurs all along the spectrum, in the preceding energy blocks as well as the tailblock. Finally, focusing on growth in energy consumption ignores the fact that it is primarily growth in system peak demand, not energy growth per se, which contributes to the need for new facilities.


73. For a discussion of lifeline rates based upon social welfare considerations, see notes 93-108 & accompanying text infra.

It cannot be assumed that tailblock energy users contribute disproportionately to system peak demand. As one commentator has noted:

[A] large-volume electricity consumer whose demand falls almost entirely at off-peak hours, and hence balances the system load factor, will pay higher prices than a smaller-volume consumer whose demand falls almost entirely on-peak, even though the costs imposed on the system by the smaller volumes consumer are greater.\(^7\)

In short, new facilities must be built to meet the requirements of existing as well as new customers who do not consume energy in the tailblock of the rate. New facilities must also be built to replace worn out and obsolete plants. Shifting a disproportionate share of cost responsibility to tailblock users is not likely to result in cost based rates, but rather in subsidization of small users by large users.\(^8\)

Arguably, there is a rational basis for imposing such a tax on large users of electricity: energy conservation. If, however, tailblock consumers are as demand elastic as inverted rate advocates assume, such an approach could result in a reduction in total kilowatt hours consumed without any substantial reduction in system peak. Focusing on conservation of energy rather than on lowering peak demand may thus increase rather than decrease the need for utility rate increases.\(^7\) Indeed, one advantage of a cost based declining block rate structure is that the revenue per kilowatt hour in the tailblock is not much greater than the fuel cost of producing the additional kilowatt hour (fixed costs having been recovered in the earlier blocks of the rate). Therefore, a change in sales level does not have a significant impact on revenues. If the tailblock produces revenues which are substantially greater than the fuel cost of producing an additional kilowatt hour, fluctuations in sales due to weather conditions, economic conditions, or similar factors could cause wide swings in a utility’s revenues.\(^8\)

A broader environmental consideration may also be asserted as a noncost basis for an inverted rate structure: a reduction in overall energy consumption (independent of peak demand) will conserve scarce energy resources and lessen the overall environmental impact of the transmission and generation of electricity.\(^9\) Of course, there can

\(^7\) See Lexonomics, supra note 27, at 162.

\(^8\) In addition, inverted one-part energy rates fail to collect the full demand and customer costs imposed by small users of electricity. See text accompanying notes 89-92 infra for a discussion of this in the context of flat rates.

\(^7\) See Lexonomics, supra note 27, at 163.


\(^9\) See, Cohn, supra note 42; NARUC REPORT, supra note 4, at 17-19.
be no doubt that scarce energy sources such as natural gas should not be used to generate electricity when more abundant fuels such as coal are available; however, pricing a relatively clean source of energy above cost for large users may provide an incentive to use alternate sources of energy, such as oil, that are environmentally more harmful. In short, a major change in electric rate design, such as inverted rates, is likely to affect the use of other forms of energy as well as electric energy. One proponent of average cost based rates has thus observed:

In order to obtain the optimum utilization of all energy resources there must be some coordination between the design of rates for the various forms of useful energy, and a realistic way to achieve such coordination is to set rates for the various forms of energy including electricity, which reflect the costs associated with their production and distribution.  

Furthermore, the argument that inverted rates internalize certain social costs, such as aesthetic blight, imposed by large users of electricity is also erroneous. In the first place, such costs are exceedingly difficult to quantify and even more difficult to ascribe solely or primarily to tailblock users. For example, the deleterious effect upon the skyline of an inappropriately placed transmission line imposes a real cost to society, albeit difficult to quantify, but the line serves both large and small users alike. Even if there were record evidence to support the proposition that such costs vary with the amount of electricity consumed, attempting to internalize them through rate structure manipulation is likely to result in excess revenues to the utility, necessitating the complicated system of rebates discussed above. Such costs, however, can and should be recognized directly, either by direct taxation or government regulation aimed at specific environmental problems caused by such uninternalized costs. Such an approach is not only

81. See NARUC REPORT, supra note 4, at 18.
82. Commissioner Cudahy of the Wisconsin Public Service Commission has stated: "In my view the most plausible general basis for 'inverted' rates would be the substantial incorporation of uninternalized social costs into marginal costs. Uninternalized social costs might well contribute to diseconomies of scale (since such costs may tend to rise disproportionately with size). And diseconomies of scale, presumably, would have their analogues in 'inverted' rates. In any event, including uninternalized social costs (not incurred on the books of the utility) would probably produce rates yielding more than average incurred costs. The excess revenue yield could arguably be compensated by increases in later, strongly elastic, blocks (where usage would be disproportionately reduced) and possible decreases in early inelastic blocks, resulting in 'inverted' rates. But as our order in this case suggests, direct control of, or taxes on, industrial emissions generally may be a more efficient means of achieving the vital goal of internalizing social costs than the possibly distorting application of 'inverted' rates to elec-
more effective, but would have far less impact on the general economy than an inverted rate structure, particularly if applied to the industrial class of consumers. In short, such rationalizations do not appear to justify the discriminatory impact of an inverted rate structure.

2. Flat Rates

A flat rate charges the same unit price for energy regardless of the level of consumption. Though rate flattening can be cost based, a common rationale for this approach is that "a kilowatt hour is a kilowatt hour" and thus, price should not vary between large and small users. Such a simplistic approach, however, overlooks the cost based reasons that result in differences in the rates charged within and among customer classes.

Every consumer's bill is made up of three basic cost components—the demand and energy components and a customer charge. Although all consumers impose such costs on a utility's system, they impose them in varying degrees, depending upon each consumer's usage character-


83. As the 1974 NARUC report pointed out, "The inversion of industrial rates does not make sense. It is not desirable to impose a penalty based on the size of a plant. Much of industry would be forced to revert to the local generation of power, which has a much worse effect on the environment than does central power generation. Increased costs would probably be passed on in the form of higher prices for goods." NARUC REPORT, supra note 4, at 33. See also Lexonomics, supra note 13.

84. For a discussion of the social welfare goals sought by the lifeline rates which result from inverted rate structures, see text accompanying notes 93-108 infra.

85. For example, substantial increases in the cost of fuel over the past several years have tended to flatten electric rates to some degree. Similarly, if a three part rate is used—that is, a rate with separate demand, customer, and energy charges—the energy charge would reflect primarily the cost of fuel and constitute a flat energy rate. See text accompanying notes 89 & 90 infra. For examples of cost based and non-cost-based flat rates, see FLAX & DRAZEN, supra note 18, at 36-38.

86. FLAX & DRAZEN, supra note 18, at 16-17.

87. As Professor Bonbright has noted: "On the one hand, there is a strong tradition in support of the fairness of rate differentials based on cost differentials. But on the other hand, there is a widely held, conflicting belief in the 'inherent fairness' of a rule of equal prices for services regarded as 'the same' in some superficial sense and despite marked differences in cost of rendition. This popular preference for rate uniformity beyond the limits justified by the advantages of simple rate structures has been repeatedly noted by current economists, most of whom keenly regret its political appeal. Only under special circumstances can the demand for this spurious equality of treatment properly claim whatever merit can be claimed for ability-to-pay principles of pricing, or for those other 'social' principles discussed in the preceding chapter." BONBRIGHT, supra note 3, at 125.
In the case of a one-part, all energy rate, where a consumer's total bill is based on kilowatt hour consumption, collecting the demand and customer costs in the early blocks of the rate ensures that the utility will recover its full costs from all consumers. If the early blocks of the rate did not contain demand and customer costs as well as an energy charge, small users would not pay their share of these costs and would, in effect, be subsidized by larger users. Put another way, if the bulk of the demand and customer charges are spread equally throughout the rate (or concentrated in the tailblock of the rate, as with inverted rates) larger users would be paying a disproportionate share, or perhaps all, of the fixed costs and customer charges of smaller users. Even if there were a separate customer charge, collecting all of the demand and energy costs through a flat energy rate similarly would result in larger users paying a disproportionate share of the demand costs of smaller users.

In short, flat rates are not cost based. Unless there are separate demand and customer charges, a cost approach usually requires a declining rather than a flat rate. The declining block rate, properly devised, is thus a means of recognizing cost differentials between customers of varying sizes which are served under conditions producing different unit costs in proportion to their load size and consumption.

Though the impact of flat rates on energy consumption may not be quite as dramatic as inverted rates, the same conservation and environmental considerations discussed above are often cited in support
of such an approach.\textsuperscript{91} The arguments made against inverted rates, however, apply equally to flat rates. Moreover, if all energy \textit{is} charged at the same rate,

\[ \text{[the effect may either be that customers will eliminate their marginal uses and confine their demands to system peak, thus impairing system load factor improvement as in an inverted rate system, or else high volume customers will be only slightly affected by the increase and will continue their established consumption.} \textsuperscript{92} \]

3. \textit{Lifeline Rates}

A lifeline rate is usually a low, below cost, uniform charge for the first several hundred kilowatt hours of electric consumption by residential consumers.\textsuperscript{93} Though the details of these rates vary from jurisdiction to jurisdiction\textsuperscript{94} (some proposals purport to be cost based\textsuperscript{95}) this section will focus on the primary social welfare goal of these proposals: providing for a basic minimum of electricity for low income or elderly consumers.

The origin of lifeline rates has been traced to telephone rate cases.

It was argued that for invalids and the elderly a telephone can mean the difference between life and death in an emergency. Inasmuch as many people in such circumstances have extremely limited means, it was proposed that telephone service should be made available at an extremely low cost to such persons. From this, the argument evolved that a certain minimum amount of electricity is a necessity in the modern world and that it should be made available at the minimum cost so that all could afford it.\textsuperscript{96}

There are significant differences, however, in the economics of telephone and electric services which make the arguments for lifeline tele-

\begin{itemize}
\item \textsuperscript{91} \textit{See, e.g., Lexonomics, supra note 13, at 162.}
\item \textsuperscript{92} \textit{Id. at 165.}
\item \textsuperscript{94} \textit{The details of these proposals vary among jurisdictions in term of the "length" of the lifeline to be provided, the actual rate that is charged, and precisely which customers shall make up for the consequent loss of revenue. See, e.g., Rate Design for Elec. Corp., 15 P.U.R.4th 434 (testimony of Dr. Joe D. Pace), reprinted in HANDBOOK, supra note 18, at 309.}
\item \textsuperscript{95} \textit{See text accompanying note 74 supra. See also Rate Design for Elec. Corp., 15 P.U.R.4th 434 (testimony of Dr. Joe D. Pace) reprinted in HANDBOOK, supra note 18, at 33-36. Though a lifeline rate structure often results when excess revenue derived from marginal cost rates is rebated to customers who have the least demand elasticity—small residential consumers—it has been recognized that such marginal cost lifeline rates "cannot be viewed as either a universal or a perfect solution to the problems faced by the poor and the elderly." Id. at 305.}
\item \textsuperscript{96} \textit{FLAX & DRAZEN, supra note 18, at 52.}
\end{itemize}
phone rates largely inapplicable in the case of electric utilities. There are other difficulties as well. Some commissions have recognized that the primary goal sought by a lifeline rate—namely, subsidization of low income electricity consumers—cannot be achieved in a nondiscriminatory manner. As the Illinois Public Service Commission has noted:

The "lifeline rate" concept itself requires that the cost of supplying energy to a certain group of customers to be subsidized by other groups or customers. Thus, the net impact of a lifeline rate is to shift expense from one group of rate payers to another and to distort a rate structure which is fair and reasonable from the standpoint of allocating economic costs among classes of customers.

Should any direct subsidy accrue to the benefit of the elderly, the poor, those on a fixed income and other economically disadvantaged groups, it should be done through the established legal procedures afforded by the federal and state legislative processes. Approaches suggested by some intervenors would violate the anti-discrimination provisions of the Illinois Public Utilities Act, as amended.

97. "[T]here are significant differences between telephone service and electric service which make the argument for lifeline telephone rates inapplicable in the case of electricity. First, the telephone company can and does offer different varieties of service available to residential customers. For example, a basic, limited service might entail a low monthly charge and a charge for every call made, with a higher charge for calls to surrounding communities. For a slightly higher monthly charge, the user might be allowed unlimited calls within the community but a charge for calls to surrounding communities. Finally, for a still higher charge, the user may be allowed unlimited calls within his own community and to surrounding communities. Thus, a lifeline service could provide a low monthly charge including a relatively small number of free calls and a high charge for calls above the first few. This would ensure that only those users who anticipated making relatively few calls would avail themselves of the service.

"In contrast, such distinctions cannot be made for electric service. Therefore, to avoid legal questions of undue discrimination, the low rate for the first 300 kilowatt hours would have to apply to all residential users. A second difference is that not all residential customers pay for their own electricity. Many low income users live in apartment complexes where the cost of electricity is included in the rent. In many cases, such apartment complexes are served under commercial rates so that the lifeline exemption would not benefit these users. In fact, they would be penalized. A lifeline rate would result in a loss of revenues which would have to be made up by increasing rates to all other users. If the commercial rate is raised in order to partially subsidize the lifeline users, the higher price of electricity under this rate would eventually be reflected in higher rents to the tenants, thereby penalizing many of the users whom the lifeline rate was intended to help. Also, the higher cost of electricity would eventually be reflected in higher prices at the grocery store, the laundromat, the department store and in higher prices for items manufactured using electricity. In the end the subsidy in residential electric rates would be at least partially offset by higher prices for goods and services purchased by residential customers. It is even conceivable that a $1 subsidy in residential rates would be offset by an increase in the cost of goods of more than $1, due to the impact of sales taxes and percentage mark-ups." Id. at 52-53.

Thus, some lifeline rates recently enacted have been pursuant to state statutes authorizing commissions to implement such reforms. Even if the power to implement such rates is expressly provided, however, it is likely that such rate structure manipulation will work to the disadvantage of many low income consumers. The reason is that the relationship between income and electricity use is not at all clear, notwithstanding the contrary assumptions of proponents of lifeline rates. Low income customers are not necessarily a homogeneous, low consumption group. Many live in master metered dwelling units where the landlord is billed and passes that cost on to the occupants through the rent. Others may have large families, older and poorly insulated homes, and older, less efficient appliances. Still other low income consumers may use electric space heaters and water heaters. Such users would be excluded from the low consumption class and could find their electricity rates substantially rising under a lifeline rate, instead of falling.

Many affluent consumers (those who are frequently away from home, who cook relatively few meals at home, or who have small families or vacation homes), on the other hand, might fall into the low consumption class. Indeed, low income consumers who use larger amounts of electricity would not be assisted by such a rate but could, under some proposals, subsidize moderate to high income customers. Thus, the Oregon commissioner aptly noted, in rejecting a lifeline rate proposal,
that he did not want to be in the position of helping "some of the needy at the expense of others equally in need."\textsuperscript{102}

Even if there exists a significant correlation between electricity use and income, a direct subsidy that is not linked to utility rates may be a more effective means of assisting the poor. With a direct subsidy, such as energy stamps, the intended benefit is received by the intended beneficiary with a greater degree of certainty.\textsuperscript{103} Since considerable disagreement exists as to whether low use customers—those who are being subsidized by lifeline rates—are indeed low income customers, this is particularly important. Moreover, a more uniform pattern of aid is possible through a program such as energy stamps. Electricity is but one of the forms of energy whose rising cost causes hardships to the poor. With a direct subsidy, those whose energy source is electricity would not be singled out for aid while those whose energy source is gas or coal are neglected.\textsuperscript{104} Furthermore, this approach spreads the burden of such a non-energy-related subsidy to the entire taxpaying public, rather than imposing such a tax solely on the subscribers of the particular service.\textsuperscript{105} Thus, with a direct subsidy, there is no need to distort the resource allocation function that cost based prices serve.\textsuperscript{106} Of course, there are a number of problems with the direct subsidy approach as well, not the least of which is the difficulty of administering such a program.\textsuperscript{107} Given the importance of providing assistance to low income consumers, however, such assistance should be provided directly, not through the "hit or miss" approach that results from rate structure manipulation.

In short, as with the previously discussed electric rate reforms, lifeline rates, as commonly proposed, result in a tax on some users for the benefits of others. Even assuming that such a tax can be levied, it is not likely that this approach will accomplish its goal. A direct subsidy should be provided rather than a discount rate that would aid some of the poor at the expense of other low income consumers.\textsuperscript{108}

\textsuperscript{103} See Pace, The Poor, the Elderly and the Rising Cost of Energy, PUB. UTILS. FORTNIGHTLY, June 5, 1975, at 26-30.
\textsuperscript{104} See id.
\textsuperscript{105} Id.
\textsuperscript{106} Id.
\textsuperscript{108} See generally BONBRIGHT, supra note 3, at 109-20.
III. Natural Gas Rate Structure Reforms

The chronic shortage of natural gas and its rising cost have provided the impetus for recent rate structure reforms in the natural gas context. Electricity is a derivative energy source which, given sufficient coal, oil, or hydro-power, theoretically can be generated without limitation; natural gas, however, is a primary energy source which is "elusive, exhaustible, and irreplaceable." The present supply of natural gas is not sufficient to meet increasing demand. Moreover, because the price at which producers are permitted to sell gas at the wellhead is regulated by the Federal Power Commission (FPC) and at the burner tip by state commissions, the demand for gas is not limited by the market mechanism. The problem that arises is how to devise alternative administrative policies and procedures to allocate this limited supply and restrict demand. For this reason, rate structure reform in the natural gas context must be discussed in reference to the impact the reforms will have on such administrative policies and procedures and vice versa.

Unfortunately, the chronic shortage of natural gas in the interstate market, with concomitant effects on the intrastate market, will probably continue for many years to come. Significant changes in regulatory policy, such as deregulation of the wellhead price of natural gas dedicated for interstate consumption, eventually may bring the supply and demand for natural gas into balance. Even if deregulation were to provide the incentive to begin extensive exploration, however, it would be several years before such a balance could be achieved. Similarly, attempts to increase the supply of natural gas through the gasification of coal, the use of synthetic natural gas plants, and the development of Alaskan reserves are not only costly but are unlikely to alleviate the chronic shortages which presently exist. Voluntary conservation programs, of course, are extremely important in discouraging wasteful uses of energy, but voluntary restriction of demand will not be sufficient to rectify the balance between supply and demand.

Given this context, most natural gas rate structure reforms advocate the direct use of pricing to reduce demand by discouraging what are perceived as wasteful or inferior uses of natural gas. A fortiori,

112. See note 154 infra.
they advocate elimination of allegedly "promotional" rates for large volume users and purport to imitate, under regulated conditions, the supposed operation of the free market.\textsuperscript{113} As in many of the electric rate reforms, the most popular natural gas rate reforms do not use the same cost standard for all consumers. As a result, they would shift among and within customer classes, not only the supply of gas, but revenue responsibility as well.

In a free market, the prices which result from the interaction of supply and demand allocate the supply of a scarce resource. In contrast, in the regulated natural gas industry, not only is supply allocated through a regulated price, but there is also a nonprice mechanism for the direct allocation of supply, curtailment plans.\textsuperscript{114} Based primarily upon end uses,\textsuperscript{115} these plans allocate the limited supply of artificially

\textsuperscript{113} It has been noted that FPC experience in the area of natural gas allocation has clearly illustrated "the basic difficulty of using traditional public utility regulation, designed primarily to prevent monopoly exploitation of the consumer, to achieve optimum utilization of a natural resource." Koplin, Conservation and Regulation: The Natural Gas Allocation Policy of the Federal Power Commission, 64 YALE L.J. 840 (1955).

\textsuperscript{114} Curtailment plans constitute one of the administrative responses made by the FPC and state utility commissions to the natural gas shortage. Since late 1970, when supplies of natural gas began to fall short of demand, it became necessary to devise plans to allocate available natural gas supplies. Under current FPC procedure, each interstate pipeline experiencing a supply shortfall files a formal tariff incorporating a "curtailment plan." The curtailment plan sets out the manner and order in which customers' deliveries will be curtailed. The standards against which such plans are measured are those of sections 4 and 5 of the Natural Gas Act, 15 U.S.C. §§ 717c and 717d (1970). See Louisiana Power & Light Co. v. F.P.C., 406 U.S. 621, 642-44 (1972). The FPC, as a matter of general policy, has expressed a preference for priorities of service based on the end use of natural gas by the ultimate consumers and on the volume of delivery. Order No. 467-B, 49 F.P.C. 583 (1973).


inexpensive natural gas first to those consumers who put it to the most valuable uses. In the absence of complete deregulation, this is how gas in fact should be allocated. Such plans achieve the goal of optimal allocation of scarce supplies directly, in contrast with attempts to achieve that goal indirectly through artificial pricing policies. Such pricing policies deviate from strict cost of service principles and may,


The average national prices of fuel reported to the Federal Energy Administration for the 1975-76 winter (in 1975 dollars) were:

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane at 40 cents per gallon</td>
<td>$4.46 per Mcf</td>
</tr>
<tr>
<td>No. 2 Fuel Oil at 38 cents per gallon</td>
<td>$2.80 per Mcf</td>
</tr>
<tr>
<td>Residual Fuel Oil at 30 cents per gallon</td>
<td>$2.05 per Mcf</td>
</tr>
<tr>
<td>Coal at $18 per short ton</td>
<td>$0.82 per Mcf</td>
</tr>
<tr>
<td>Electricity at 2.755 cents per kwh</td>
<td>$8.24 per Mcf</td>
</tr>
</tbody>
</table>

Average natural gas prices for consumers in 1975 were:

- Residential = $1.73
- Commercial = $1.41
- Industrial = $1.01


117. Because of the artificially low price for interstate natural gas, many commercial and industrial consumers—especially utilities generating electricity—have, in the past, opted to use natural gas in applications for which more abundant fuels are (but for their higher price and greater potential to pollute) equally suitable. A curtailment policy based upon end use and the relative costs of conversion from gas burning facilities imposes upon such users the burden of converting to more abundant alternate fuels. Thus, "inferior" uses of natural gas, such as boiler fuel for generating electricity or raising steam for industrial or commercial uses, as well as most other large volume indirect flame uses, are the first to be curtailed. Natural gas is used in these applications solely for heat generation, rather than for its special properties (e.g., molecular structure, clean burning, precise temperature control) and this function can be performed by fuel oil or coal. An end use priority curtailment scheme which differentiates between these premium and non-premium types of uses, forcing those users who are most economically able to convert to alternate fuel systems to do so, minimizes the overall impact of the shortage on the national economy.
in fact, violate the Natural Gas Act\textsuperscript{118} and state regulatory provisions. Not only is manipulation of rate structure a less than optimal basis upon which to attempt to effect rational allocation of scarce natural gas; to the extent that such rate structures deviate from cost-of-service standards, they may undercut the effective operation of curtailment policies and thus undermine the rational allocation of limited supply.

The regulatory concern with fairness\textsuperscript{119} at the federal level is codified in section 4 of the Natural Gas Act, which makes clear that the natural gas rates over which the FPC has jurisdiction must be just, reasonable, and nondiscriminatory.\textsuperscript{120} In enacting this provision, Congress intended that natural gas should "be sold in interstate commerce for resale to the ultimate consumer at the lowest possible reasonable rate consistent with the maintenance of adequate service in the public interest."\textsuperscript{121} This article suggests that just and fair rates are those which reflect the costs incurred by the utility in serving any given class of customers. Since utilities are regulated and their revenue requirements are fixed on the basis of the cost to the utility of serving its customers, each customer should bear that portion of the pipeline's or distributor's costs which are fairly attributable to the intensity and level of demand which that customer places on the system. As we noted in the discussion of electric rates, a rate structure which deviates from this fundamental principle potentially can yield rates which are unduly discriminatory.\textsuperscript{122}

\textsuperscript{119} See notes 47-64 & accompanying text supra.
\textsuperscript{120} "(a) All rates and charges made, demanded, or received by any natural-gas company for or in connection with the transportation or sale of natural gas subject to the jurisdiction of the Commission, and all rules and regulations affecting or pertaining to such rates or charges, shall be just and reasonable, and any such rate or charge that is not just and reasonable is declared to be unlawful."
\textsuperscript{121} See text accompanying notes 47-64 supra.
\textsuperscript{122} "(b) No natural-gas company shall, with respect to any transportation or sale of natural gas subject to the jurisdiction of the Commission, (1) make or grant any undue preference or advantage to any person or subject any persons to any undue prejudice or disadvantage, or (2) maintain any unreasonable difference in rates, charges, service, facilities, or in any other respect, either as between localities or as between classes of service." 15 U.S.C. § 717c (1970).
\textsuperscript{123} Alabama-Tennessee Natural Gas Co. v. FPC, 359 F.2d 318, 331 (5th Cir. 1966), cert. denied, 385 U.S. 847 (1966). The setting of just and reasonable rates requires a balancing of the interests of the company and its investors with those of consumers. See FPC v. Hope Natural Gas Co., 320 U.S. 591, 603 (1944). However, "the Commission is not bound to use any single formula or combination of formulae" in arriving at just and reasonable rates. Alabama-Tennessee Natural Gas Co. v. FPC, 359 F.2d at 331. It is the result reached, not the method employed, which is important. FPC v. Hope Natural Gas Co., 320 U.S. at 602.
\textsuperscript{124} See text accompanying notes 47-64 supra.
The natural gas rate structure reforms which have received the greatest attention and which will be discussed in this part of the article—"one-part" rates, incremental pricing, and end use rate schedules—all suffer from these basic infirmities: They yield potentially illegal rates and threaten rational gas allocation programs.123

A. One-Part Versus Two-Part Rates

Natural gas ratemaking has traditionally favored two-part rates—one part to reflect the rate of energy use, the other part to reflect the amount of energy consumed.124 The former part, the "demand" component, is related primarily to the utility's fixed costs which are those associated with a customer's basic entitlement to receive gas and with the system's responsibility to install and maintain capacity sufficient to serve maximum needs. Such fixed costs include investment in pipeline facilities, taxes, and depreciation. The second part, the "commodity" component, relates more directly to the utility's variable costs. It is a volumetric component inasmuch as such costs (e.g., the cost of the gas itself and the cost of compressor station fuel) vary in relation to the volume of gas delivered to any given customer.

Prior to 1970, the FPC generally used a two-part rate. In the Atlantic Seaboard case125 the commission followed what came to be
known as the "Seaboard formula" of cost allocation and classification, whereby 50 percent of the fixed costs of transmission was allocated to the demand component and 50 percent was allocated to the commodity component of a two-part rate. That same year, in *Northern Natural Gas Co.*, the commission used this formula to allocate the fixed costs of production. By 1963, however, the commission acknowledged that the direct translation of the Seaboard formula into rate design might have an adverse impact on pipeline load factors, might dampen incentives to construct storage and peak-shaving facilities, and might make it difficult for natural gas to compete in price with other fuels. Thus began a trend of tilting the fifty-fifty Seaboard formula to assign a greater share of fixed costs to the demand component.

The "tilting" of Seaboard costs to make the price of natural gas low enough to be competitive with alternate fuels was affirmed by the United States Court of Appeals for the Seventh Circuit in *Fuels Research Council, Inc. v. FPC.* The court, however, reiterated the seminal rule of *FPC v. Hope Natural Gas Co.*, that the commission must not consider the end use of gas in a rate proceeding. Moreover, section 5(a) of the Natural Gas Act was held not to permit the commission to consider conservation. The trend of "tilting" fixed costs away from the commodity component of the two-part rate was short-lived. In 1973 the commission ordered that 75 percent of a pipeline's fixed transmission and storage costs be assigned to the commodity component of that system's rates. This was done to reduce incentives for pipelines to make sales to high

127. But note that in *Alabama-Tennessee Natural Gas Co.*, instead of utilizing the fifty-fifty Seaboard formula, the commission found it appropriate, for purposes of cost allocation and classification as well as rate design, to utilize straight volumetric allocation because the pipeline system at issue was in a developmental stage where it was being under-utilized, and, consequently, peak loads were insignificant. *Alabama-Tennessee Natural Gas Co., 11 F.P.C. 77, 88 (1952), aff'd, 203 F.2d 494 (3d Cir. 1953).*
128. *Southern Natural Gas Co., 29 F.P.C. 323 (1963).* In another case, the commission recognized a similarly undesirable effect on incentives for addition of interruptible sales to improve pipeline load factors. *United Fuel Gas Co., 31 F.P.C. 1342, 1348 (1964).* Commodity rates were designed in part to create these incentives.
129. 374 F.2d 842, 852 (7th Cir. 1967).
130. 320 U.S. 591 (1944).
131. 374 F.2d at 853-54.
consumption industrial customers. Whether the commission will continue this new trend of "tilting" toward the commodity component where two-part rates are adopted remains to be seen.\textsuperscript{133}

The logical extreme of the present trend is the development of one-part, 100 percent volumetric rates. Such rates recognize only the total \textit{amount} of gas usage and fail to take into account the fact that the \textit{rate} at which gas is used has a significant bearing on the costs of delivering that gas. The assignment of all fixed and variable costs only on the basis of volumes taken thus ignores the effect of load factor on the demands placed upon a system.\textsuperscript{134}

Indeed, the fixed costs of serving an individual residential or small commercial customer are, with respect to the amount of gas he consumes, proportionately greater than the fixed costs associated with serving a larger volume high load factor industrial customer. While the former's fixed costs must be recovered from the rates charged for relatively small volumes of gas, the latter's may be spread across a larger volume, resulting in a lower price per thousand cubic feet.\textsuperscript{135}

\textsuperscript{133} In a recent case, while affirming the initial decision with respect to approval of the use of the \textit{Seaboard} method for both cost allocation and rate design, the FPC postponed ruling on the appropriate methodology of cost classification, allocation, and rate design until resolution of Tennessee's rate increase applications in more recently instituted proceedings. Tennessee Gas Pipeline Co., Op. No. 769, UTIL. L. REP. ¶ 11,827, at 13,974 (FPC, July 9, 1976). In a related matter, the commission noted that quantity discounts lead to lower rates \textit{only} where the resulting load factor is improved, but it was not prepared to hold that rates providing lower unit costs to large users are per se discriminatory. Order Adopting Initial Decision, Southwest Gas Corp., No. RP 74-51 (FPC, July 20, 1976). It was crucial to the position taken by the commission that there are no industrial customers on the Southwest system and that Staff did not meet its burden of proof in contesting Southwest's proposed block-type rate.

\textsuperscript{134} As in the electric industry, customer load factor in the gas industry is the ratio of a customer's average use to its peak use. Where gas is taken at a completely uniform rate, average use is equal to peak use and load factor is 100\%. On the other hand, where, for example, a small residential customer averages about 15 Mcf (thousand cubic feet) per day, but on a particularly cold day uses 50 Mcf, his load factor would be a low 30\%. Although the utility would have to maintain capacity sufficient to meet that 50 Mcf demand at any time, most of the time the residential customer is not using that capacity and, thus, the utility is making no return thereon. The high load factor customer purchases gas in both the utility's peaks and valleys, regularly using the capacity which it requires the utility to maintain. Consequently, a low load factor customer's responsibility for a utility's fixed costs (installing and maintaining capacity) is normally much greater than its proportionate share of the utility's total volume of gas delivered. Thus to allocate all fixed costs on a 100\% volumetric basis undercharges low load factor customers and overcharges high load factor customers for the respective costs they force the system to incur. "Load factor" in the natural gas industry also refers to the ratio of a given pipeline's average deliveries over a given period to the maximum capacity of the pipeline's facilities. \textit{Leeston, The Dynamic Natural Gas Industry} 181 (1963).

\textsuperscript{135} The important relationships between load factor, volume, and utility costs bear
Two-part rates recognize that responsibility for fixed costs is not necessarily proportionate to the volume of gas consumed and allow the utility to recover its fixed costs in the same way they are incurred (i.e., whether or not any gas is consumed).

Arguing in favor of one-part rates in the *Consolidated Gas Supply Corporation* case, the FPC staff contended that the gas supply shortage had removed the close relationship between actual peak-day use and pipeline capacity on which the *Seaboard* formula had been based. The District of Columbia Circuit found that the development of gas shortages and the resulting excess pipeline capacity provided a reasonable basis for reducing the demand component. This situation also provided a basis for moving away from a price differential based on the extent to which given customers burden the system and produce a need for expensive peaking facilities. The court, however, declined to “embrace or approve the Commission's view that a 100% classification of fixed costs to the commodity component would be proper.” The court held that the commission's formula allocating 25 percent of fixed costs to the demand component and 75 percent to the commodity component gave sufficient consideration to such differences in cost and was not unreasonable.

Although proportionate responsibility for fixed costs may be shifting away from low load factor customers due to the existence of excess capacity on some lines, this development does not justify

significantly upon the basic concepts involved in ratemaking. Fuller discussion of the topic, which is beyond the scope of this article, may be found in *American Gas Association, Gas Rate Fundamentals* (1969).


137. *Id.* at 1186-87. *See also* *Natural Gas Pipeline Co., Op. No. 782, Util. L. Rep.* ¶ 11,873 (FPC, Nov. 9, 1976). *Initial Decision, Colorado Interstate Gas Co., No. RP 75-86 (FPC, Dec. 29, 1976). But see Initial Decision, Consolidated Gas Supply Corp., No. RP73-107 (FPC, Dec. 10, 1976).* In that decision, Judge Grossman declared that logic dictated continuation of the unmodified *Atlantic Seaboard* formula. He stated that a shift to the *United* formula would magnify the risk of declining supply because of the greater difficulty of recovering fixed costs, and would be inequitable to high load factor customers who have invested heavily in their own storage facilities. Nevertheless, Judge Grossman felt compelled to follow Opinion No. 782 and order adoption of the *United* formula.

138. 520 F.2d at 1187. *The court of appeals specifically noted that the United system “... has been affected by the shortage of natural gas more than any other pipeline.” Id. at 1186 n.58. United remains the pipeline suffering the most severe curtailment, projecting a 50.98% deficiency for firm requirements for the 1976-77 winter heating season. See note 177a infra.*

139. If a pipeline has excess capacity, that is, if its peak load capacity is not being fully utilized, there is less justification for attributing the cost responsibility for such
abandonment of the demand component in natural gas ratemaking. As with other rate structure reforms currently suggested, the one-part rate may be motivated, at least in part, by considerations other than cost-matching. Such broad noncost, social policy considerations may in fact be providing the strongest impetus toward total elimination of the demand component.140

The popular reaction against so-called "promotional" rates for large volume users may accurately point to the fact that low commodity charges did in the past help serve to lure industrial customers as the price of gas rose in relation to other fuels. This reaction fails, however, to recognize that low commodity rates, if based on cost, are not an incentive for inefficient or wasteful use by large volume customers. The pejorative connotations usually attached to the term "discount rates" in this context reflect the failure to recognize an important fact: it is economically justifiable to continue to use a separate demand component to which to allocate a portion of fixed costs, even in an era of gas shortages, since consumers thereby do pay a rate based on cost.141

In conclusion, the elimination of two-part rates represents a distortion of traditional ratemaking principles. One-part rates deviate from primarily cost based pricing procedures and result in a shift of cost responsibility to large volume users.142 Inasmuch as one-part

facilities to the lower load factor customers who are otherwise normally responsible for the variations in demand necessitating peak demand capacity. See note 137 supra.

140. For example, the court of appeals in Consolidated Gas Supply Co. v. FPC based its affirmation of the 25-75% formula largely on its recognition of the "narrow and circumscribed" nature of the court's role in reviewing a rate order issued by the FPC. 520 F.2d at 1184, citing Permian Basin Area Rate Cases, 390 U.S. 747, 766 (1968), and Natural Gas Act § 19(b), 15 U.S.C. § 717r(b) (1970). However, the commission's order below had at least hinted that, even in the absence of cost justified factors, it might have authority to devise a rate structure to serve the goal of discouraging low priority industrial consumption. The commission did not, however, have to reconcile that hint with the adverse Hope rule inasmuch as it found that the record justified a change in the method of cost classification entirely apart from the question of end use. See United Gas Pipeline Co., Op. No. 671A, 51 F.P.C. 1014, 1016 (1974). The court of appeals expressly declined to rule on the issue of whether the commission may rely substantially on noncost factors in making rate structure decisions. See 520 F.2d at 1184. This issue will require judicial resolution inasmuch as the commission apparently reads the affirmance of its opinion in Consolidated as judicial acquiescence in the commission's ipse dixit rejection of the Hope rule. Natural Gas Pipeline Co., Op. No. 782, UTL. L. REP. ¶ 11,873, at 14,220 (FPC, Nov. 9, 1976).

141. With regard to similar cost justifications for declining block rates in the electric industry, notwithstanding arguments attempting to characterize them as "promotional rates," see notes 88-90 & accompanying text supra.

142. It may be noted further that the design of gas rates on a 100% volumetric basis could have potentially destabilizing effects upon utility revenues. Where fixed
rates suffer from many of the practical disadvantages which characterize incremental pricing and end use pricing (e.g., incentives to residential and small commercial load growth, disincentives to conservation, and interclass subsidization), these disadvantages are explored more fully in the following discussion of incremental pricing.

B. Incremental Versus Rolled-In Pricing of New Gas Supply

The issue which has stirred perhaps the greatest controversy recently with regard to natural gas rate design is the manner in which supplemental gas supplies are to be priced.143 Throughout the history of federal regulation of the natural gas industry, the FPC has consistently favored rolling in the price of new increments of gas supply.144 Under this practice, the costs of new supplies are rolled into the aggregate cost of the pipeline's or distributor's total supply, and the customer pays the average cost per thousand cubic feet of that total supply, not just the cost of the new gas. The primary appeal of rolled-in pricing is

costs are allocated to customers as closely as practicable to the proportions in which those costs are incurred (most preferably through a monthly fixed charge sufficient to compensate the utility for such fixed costs, in combination with a variable charge which recovers the cost of the gas actually delivered), the effects of conservation and shifting consumption patterns due to curtailments will not be so dramatic vis-à-vis utility revenues. However, similar to the problem presented by inverted electric rates, where gas rates are designed volumetrically, a decline in consumption may mean that the utility will be unable to recover its fixed costs. If two-part rates (or the monthly fixed charge method) are used, the demand component (or monthly fixed charge) will vary as between classes and customers, while the commodity rate can remain relatively the same for all customers. With such a structure, if gas consumption patterns change, the utility's revenue remains stable inasmuch as all customers pay the same unit rate for gas actually consumed. Fixed costs will be recovered regardless of how much gas is sold during any given period, and customers pay those costs in proportion to the rate of demand which they impose upon the system. Such structure neither offers a use-stimulating "bargain rate" to large volume customers nor requires any class of customers to subsidize use by any other class. See Washington Gas Light Co., Case No. 647, Order No. 5833 (D.C. Pub. Serv. Comm'n, Oct. 29, 1976) (setting a basic monthly charge and uniform commodity rate).

143. "Supplemental gas" herein refers not only to gas acquired through unconventional techniques or from unconventional sources (e.g., liquified natural gas, synthetic gas, and Alaskan gas) but also to new conventional gas supplies whose cost is substantially above the cost of historic supplies (e.g., natural gas subject to the price increase allowed in No. RM75-14, Op. No. 770-A, at 2-3 (FPC, Nov. 5, 1976)). See OFFICE OF ECONOMICS, FPC, INCREMENTAL PRICING OF SUPPLEMENTAL GAS (1976) [hereinafter cited as INCREMENTAL PRICING].

that, \textit{ceteris paribus}, it treats customers receiving equal service equally by charging the same price to all who take gas from a pipeline at the same point. This approach recognizes that all customers, regardless of the volume of gas that they consume, benefit from having the entire gas gathering and transmission system available to them. While it is true that old customers of an expanding pipeline are forced to pay higher prices under rolled-in pricing without receiving any visible increase in service, this approach does insure that one customer does not pay a radically different price for the same service received by another customer simply because he has been receiving the service longer.

In contrast with rolled-in pricing, incremental pricing policy establishes rates based directly upon the costs of the increasingly more expensive incremental gas supplies. Like the electric rate reforms based on marginal cost, however, the most commonly suggested incremental pricing reforms are applied selectively. They do not require that all customers pay the incremental price. Under these schemes, only selected customers must assume the higher cost burden of the new supplies, while the remaining customers continue to pay for gas at the old lower rates. The underlying principles of incremental cost pricing theory, along with its adverse practical consequences, merit close examination.

1. \textit{Incremental Cost Pricing—The Theory Stated}

The incremental pricing approach most commonly suggested postulates that it is the large, low curtailment priority industrial consumers who are responsible for rapid depletion of gas reserves and the resulting need to develop expensive supplemental supplies. Thus, it is argued, regulators should discourage the use of natural gas by these consumers whose use is deemed to be inefficient and wasteful by imposing upon them the full costs of such new supplies. The assumption underlying this approach is that assigning such consumers a price equal to the cost of the production and transportation resources required to provide new gas will discourage them from inefficient use and overconsumption of natural gas. In this way, consumers will presumably receive the correct signals regarding the scarcity and costliness of supplemental supplies. Consequently, they will use gas more efficiently, in-

\footnote{145. See generally \textit{Battle Creek Gas Co. v. FPC}, 281 F.2d 42, 46 (D.C. Cir. 1960). See also \textit{Northern Ill. Gas Co. SNG Plant Processing} (FEA, filed Nov. 5, 1976) (testimony of Jann W. Carpenter on behalf of General Motors Corp., at 9). Moreover, there is even an argument to be made for charging the higher prices to the new customers since it is they who created the new demand on the system.}
vest more heavily in energy conserving technology, and avoid the inefficiency of expending more of the nation's economic resources on new gas supplies than such supplies are worth.\footnote{146}

Because industrial consumers are the largest individual users of natural gas and are thought to have the most elastic demand, most incremental pricing reforms seek to impose the costs of new gas supplies only upon the industrial class. Even if the assumptions upon which the thesis is founded were valid,\footnote{147} the real world problems of implementing incremental pricing make adoption of this theory impractical.

2. Practical Problems

If a rate structure featuring incremental pricing of supplemental gas supplies were to be adopted, one of the first and most important practical questions to arise would be how to correlate the separate rate schedule for such gas with current curtailment policies. At least two alternatives are available: (a) supplemental incrementally priced gas supplies could be provided on a firm basis only, exempt from the curtailments to which conventional supplies are vulnerable; (b) supplemental incrementally priced gas supplies could be rolled in to a pipeline's or distributor's total supply for curtailment purposes.\footnote{148}

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\footnote{146} See Incremental Pricing, supra note 143, at 17. See also Energy Resources Council Policy Statement on LNG Imports, at 4, Aug. 1976. The ERC concluded that rolled-in prices for existing high priority customers and incremental pricing for lower priority or new customers is “desirable where administratively feasible,” but it recognized that there are serious practical obstacles and conditions precedent to such a scheme’s effectiveness as a national policy. \textit{Id.}

\footnote{147} See text accompanying notes 157-71 infra.

\footnote{148} Both of these alternatives have figured importantly in the ongoing proceedings in Columbia LNG Corp. v. FPC, No. CP71-68 (FPC, filed May 27, July 7, 1975). That proceeding arose originally to consider applications filed by Columbia LNG Corp. and two other companies requesting authorization to import approximately one billion cubic feet per day of liquefied natural gas (LNG) from Algeria, to sell the LNG in interstate commerce, and to construct facilities necessary to receive, regasify, and transport the imported LNG. The initial decision, issued by the administrative law judge who had presided at extensive hearings, approved the application and assumed, without discussion, that the LNG would be sold on a rolled-in pricing basis. (No party to the proceeding had advocated a method other than rolled-in pricing, and such method had been used in the past for all new certificated supplies of natural gas.) Consequently, the FPC's issuance of Opinion No. 622 on June 6, 1972, affirming the initial decision with certain new conditions attached, came as a surprise to all, in that those new conditions required that the LNG be sold on an incrementally priced basis and that only those distributor customers agreeing to resell the LNG under a separate incrementally priced schedule would be eligible to purchase it from the applicants.

Following numerous applications for rehearing of Opinion No. 622 and after oral argument thereon, the commission issued Opinion No. 622-A, modifying the previous
a. Incremental Pricing—Non-Curtailable Supply

Some advocates of incremental pricing argue that expensive supplemental supplies should be incrementally priced but that such supplies should be provided on a firm noncurtailable basis. Providing higher quality service for higher prices may be a justifiable goal, but it is unclear whether future commissions can effectively be bound not to divert to other customers the gas supplies that are incrementally priced and separately contracted for. The courts have upheld the commission's expressly reserved authority to certificate a new gas supply project on a firm noncurtailable basis and then disregard contractual provisions by making such supplies subject to its general curtailment rules. As the courts have consistently held, the commission's curtailment rules need not be entirely consistent with the provisions of the commission's prior certificate orders. The commission's inability to bind itself and future commissions in a manner which avoids the po-

opinion in two important respects: (1) the condition requiring distributor-purchasers to agree to sell the LNG on an incrementally priced basis was eliminated; and (2) LNG purchased from the pipeline applicants on an incrementally priced basis would be contracted for on a noncurtailable basis.

All three applicants appealed from Opinion No. 622-A to the United States Court of Appeals for the Fifth Circuit solely on the issue of incremental pricing at the pipeline level, and in Columbia LNG Corp. v. FPC, the court reversed that part of Opinion No. 622-A appealed from and remanded the case to the commission for further evidentiary hearings on the advantages and disadvantages of incremental pricing. The court held that the record failed to provide substantial evidence warranting the commission's departure "from the longstanding Commission practice of approving rolled-in pricing," and found, rather, that the record reflected an absence of exploration of the problems which may arise under an incremental pricing scheme. Columbia LNG Corp. v. FPC, 491 F.2d 651, 654 (5th Cir. 1974). The court noted that the incremental pricing required by the commission in its opinion serves to discourage the use of imported supplies of natural gas.

On remand, the commission ordered that further hearings be held on the pricing issue; initial and reply briefs were filed in May and July 1975. See note 174 infra.


150. The commission has rejected the notion that contract provisions must govern allocation priorities stating: "We are impelled to direct curtailment on the basis of end use rather than on the basis of contract simply because contracts do not necessarily serve the public interest requirement of efficient allocation of this wasting resource. In time of shortage, performance of a firm contract to deliver gas for an inferior use, at the expense of reduced deliveries for priority uses, is not compatible with consumer protection." Order No. 467, 49 F.P.C. 85, 86 (1973). See also FPC v. Louisiana Power & Light Co., 406 U.S. 621, 646-47 (1972); Consolidated Edison Co. of New York v. FPC, 512 F.2d 1332 (D.C. Cir. 1975); American Smelting & Ref. Co. v. FPC, 494 F.2d 925, 934 (D.C. Cir. 1974) (FPC not bound by agreements among parties subject to its jurisdiction).

151. See American Smelting & Ref. Co. v. FPC, 494 F.2d 925 (D.C. Cir. 1974); Michigan Power Co. v. FPC, 494 F.2d 1140 (D.C. Cir. 1974).
tential for future diversion of separately priced supplemental supplies to other customers raises a serious credibility problem. Even with the strongest assurance from the commission, no customer purchasing under such a separate, purportedly noncurtailable rate schedule can ever feel completely secure in the belief that it will continue to receive its contractual allocation of new supplies.

Even assuming that this threshold credibility problem can be overcome, incremental pricing of supplemental supplies under noncurtailable rate schedules can ultimately erode the commission’s end use curtailment policy. Such a scheme could eventually result in curtailment of high priority consumers in many areas while lower priority consumers in other areas continue to receive reliable, albeit more expensive, gas service. For many reasons, incremental pricing of supplies made available under separate noncurtailable rate schedules may be more appealing to lower priority consumers and distributors serving those consumers than it is to distributors (particularly small distributors) whose load consists predominantly of residential and small commercial customers.

Volumes of gas from traditional domestic sources which are subject to the FPC’s general curtailment policies will continue to decline. Consequently, the combination of incremental pricing and noncurtailable rate schedules for supplemental supplies could compromise seriously the important goals which curtailment policies were formulated to achieve—the economically efficient allocation of scarce gas supplies and the protection of high priority gas consumers.

In addition to the potential undermining of the commission’s end use curtailment policy, the adoption of incremental pricing of supplemental supplies through a noncurtailable rate schedule reduces the

152. For example, distributor A with a high end use profile may opt not to commit itself to purchase a particular incrementally priced noncurtailable new supply for reasons related to price, state and local regulatory attitudes, the financial situation of the distributor, overly optimistic supply assumptions for the future, a low load factor, or inadequate storage availability. On the other hand, distributor B with a lower end use profile may opt to purchase substantial volumes under the incrementally priced noncurtailable rate schedule because it can obtain long term commitments from some of its relatively low priority customers who are willing to purchase the relatively high priced supplies of natural gas because of the valuable security provided by the knowledge that these supplies are not to be subject to the general curtailment rules of the pipeline or distributor. Distributor B may also be in a more advantageous position and be more able to commit itself to purchase these supplies because of its more secure financial situation, the attitude of its state or local regulatory agency, the existence of substantial storage on its system, its relatively high load factor, or its more pessimistic view of the supply outlook for gas from conventional sources.
pipelines' flexibility, which could result in less secure natural gas service to virtually all consumers. The traditional policy of rolling in all of a pipeline's supplies for both pricing and allocation purposes permits a pipeline to maintain a relatively high continuity of service to each of its customers, despite the inevitable occasional outages which cause interruptions in deliveries from particular supply sources. Incremental pricing of separately sold noncurtailable supplemental supplies, however, ties each of a pipeline's customers to the reliability of particular sources of supply. As additional supplies are added through new separate noncurtailable incremental rate schedules, one distributor might rely primarily upon Alaskan gas, while another might rely upon synthetic natural gas, and still another might rely on imported liquified natural gas. The result of this patchwork quilt of separate entitlements for each customer would be to reduce the flexibility of the pipeline to deal with outages of particular supply sources with service to all customers becoming much more erratic. For example, distributor A might lose 20 percent of its supply for the month of January due to a storm at sea, while distributor B loses 20 percent of its supply in February due to a mechanical failure in an SNG plant, and distributor C loses 20 percent of its supply in March due to a break in the pipeline from Alaska. A combination of rolled-in pricing and end use curtailment would spread each of these risks evenly among all of the distributors in the system. Thus, no distributor and no group of consumers necessarily would be required to suffer any substantial harm as the result of a temporary outage of a particular supply source. With specific supply sources tied to specific distributors under separate incrementally priced rate schedules, however, a temporary outage might have disastrous consequences at any time for any distributor and the consumers served by that distributor.

b. Incremental Pricing—Curtailable Supply

Another variation of incremental pricing theory posits that even the expensive incrementally priced supplies should be rolled in to the pipeline's or distributor's total supply for curtailment purposes. This alternative suffers from even greater infirmities than the alternative previously discussed, including the creation of problems of financing, administrative manageability, and discrimination.158

Financing Problems. There is a basic inconsistency inherent in an attempt to require pipelines and distributors to sell supplemental gas supplies under separate incrementally priced rate schedules subject to curtailment. The major difficulty with this combination of pricing and allocation rules is that it undermines the viability of the vast majority of supplemental supply projects under consideration by various interstate pipelines. Such projects are capital intensive and cannot be initiated without substantial financing. The difficulties in financing such projects are particularly acute today and in the foreseeable future because of an extremely tight money market. Adoption of incremental pricing for supplemental supplies subject to curtailment would, in all likelihood, create a serious obstacle to efforts to obtain financing for supplemental supply projects, thereby deterring efforts to develop new sources of supply. In an era when regulatory bodies should be exerting all reasonable efforts to create incentives to stimulate the development of new gas supplies, such a disincentive hardly seems appropriate.

Financial institutions generally have been willing to fund major gas supply projects in the past only when presented with firm long term contracts with individual customers which bind those customers to purchase the new supplies on a regular basis for the entire term of the proposed financing of the project. Firm long term contracts of this type can be obtained from consumers or distributors only when they are assured that they will receive the full benefit of the supply for its


duration subject only to the risks of failure ordinarily associated with
the particular supply. It is improbable that any consumer or distributor
would commit itself to a long term firm contract for an expensive incre-
mentally priced supply which is subject to diversion to others merely
upon the continuing and probable deterioration of the supply available
from traditional domestic sources.

In short, consumers, distributors, and investors will pay a premium
for the ability to quantify with some degree of certainty the risks in-
herent in embarking upon a new supplemental supply project. Once
that certainty is destroyed, as it would be under incremental pricing
subject to curtailment or reallocation, it will be increasingly difficult—
perhaps eventually impossible—to find investors, consumers, or distri-
butors who are willing to make the firm long term contractual commit-
ments essential to the viability of any major supplemental supply pro-
ject.

(2) Administrative Problems. A further question arises from the
prospect of pricing new gas supplies according to separate rate sche-
dules but making them subject to ordinary curtailment: Can such a po-
licy be practically administered? Even if such a policy were economi-
cally justified, prudent ratemaking would compel its rejection if it were
so complex that it was administratively unworkable.156 An adminis-
trative decision to adopt such incremental pricing in any given rate case
cannot be considered in isolation. Such a decision can be made re-
responsibly only after consideration of the consequences which are likely
to develop for any given system if successive increments of gas made
available from a variety of supplemental supply projects were sold under
separate incremental pricing schedules. The administration of multiple
incremental pricing schedules for various supplemental supply sources
would be a nightmare for regulator and regulated alike. Frequent
controversies among customers would probably result as to both (1)
the appropriate total volume of gas which they should be permitted
to receive from each source during a particular period and (2) the
total price which they should be required to pay for those volumes.

The fact that many pipelines purchase significant portions of their
total gas supplies from a number of other pipelines, who themselves
may be developing one or more supplemental supply projects, amplifies
the administrative complexities of such an approach. Accordingly, as
each of the pipelines supplying pipeline A (or distributor A) drew on its

156. See Bonbright, supra note 3, at 289.
successive supplemental projects, pipeline $A$ would be forced to revise its rate schedules and add several more tiers of schedules, all with differing allocation provisions and different prices. A staggering mathematical progression of rate schedules and the need for their constant revision would thus face a pipeline or distributor served by a large number of pipelines with a large number of supplemental sources. Such administrative problems, together with the potentially high transaction costs involved with the implementation of a policy combining curtailment with incremental pricing, must be faced squarely in an analysis of alternate rate structure policies.

(3) The Benefits of Supplemental Supplies and Lack of Justification for Discriminatory Rates. Apart from the financing and administrative difficulties created by incremental pricing of curtailable supplemental supplies, such a rate structure may result in undue discrimination. Under end use curtailment, those customers who are classified in the higher priority categories of a curtailment plan will, of course, receive service which is much more reliable than service received by lower priority customers. Since continuity of service is a major component of the value of a product such as natural gas, this means that the highest priority customers, who suffer no curtailment or relatively little curtailment, would be receiving a more valuable product than lower priority customers. At the same time, if supplemental supplies are priced according to curtailable incremental rate schedules, the lower priority customers will nevertheless be paying substantially more for an inferior product. Price discrimination has been defined as "the practice of charging different rates to different customers for substantially the same product." Clearly, such discrimination is increased where customers receiving an inferior product because of unreliable service are nonetheless charged more than customers receiving a superior product.

At least two arguments might be offered to justify such discrimination against lower priority customers. First, expensive supplemental gas supplies are obtained primarily for the benefit of the lowest priority consumers receiving service and, therefore, they should bear the costs of obtaining these supplies. Second, it is desirable to discourage in-

157. See notes 114, 117 supra.
158. See text accompanying notes 153-57 supra.
159. BONBRIGHT, supra note 3, at 374.
The first argument is factually untrue and the second is unsupported. In times of critical shortage of natural gas, when supply projections are under constant downward revision, it is impossible to determine in advance which classes of customers will receive natural gas service as a result of the addition of a new gas supply source. Virtually all gas supplies transported in interstate commerce in pipelines and distribution systems contain a commingled mixture of old conventional natural gas at low prices, newer conventional natural gas at higher contract prices, and synthetic or imported gas produced at very high prices. All customers receive deliveries from this mixture of gas purchased at many different prices from many different sources. It is unrealistic to assume, for purposes of allocating costs among gas consumers, that the low priced gas is actually being delivered to the residential and small commercial customers, while only the industrial customers are consuming the higher priced gas. Not only is it erroneous to believe that this is what actually happens, it also may constitute undue discrimination for a regulatory commission to create a legal fiction which "adjusts" engineering reality to notions of what some think should happen as a matter of policy. With the continuing decline in the availability of gas from traditional sources, customers in even the highest priorities may receive service from time to time which unquestionably is from a new supply source. Curtailment projections are not Reliable enough to provide any significant guidance as to who will actually benefit.

Furthermore, all customers in all priorities receive immediate benefits from the addition of new supply sources by way of a greater measure of protection against curtailment and a reduction in costs. Even if a particular customer or class of customers does not receive additional supplies immediately as a direct result of the addition of a supplemental source, they do receive an immediate, economic benefit because the availability of such new supplies in the future decreases the risk of curtailment for all customers. The attachment of the new supply also decreases the portion of the pipeline's capacity costs which must be borne by each customer. In this way, customers receive an

161. These arguments were articulated by the commission Staff's expert witness in Columbia LNG Corp., 47 F.P.C. 1624 (1972) (transcript at 7486 et seq.).

162. Cf. California v. Lo Vaca Gathering Co., 379 U.S. 366, 369 (1965). In Lo Vaca it was held that federal jurisdiction follows the actual flow of natural gas, using "an engineering and scientific, rather than a legalistic or governmental, test."
immediate and direct rate benefit as a result of a pipeline's greater utilization of its capacity.

In addition, there is a fundamental flaw in the line of reasoning that since lower priority customers suffer the most immediate effects of a gas shortage, they enjoy the most immediate effects of the addition of supplemental supplies and should, therefore, be required to absorb the full cost of new supplies. Such an argument misperceives the interrelationship between curtailment policy and pricing policy.

Establishing curtailment priorities and designing pipeline rates involve two entirely different concepts. In determining a policy for the curtailment of natural gas supplies during times of chronic shortage, the FPC decides administratively which consumers should be preferred in terms of continuity of service when the supply of gas is inadequate to meet the demands of all consumers. The commission has attempted to resolve this problem by designing curtailment policies based primarily upon the end use to which the gas is put. After the commission has isolated the uses for which conversion is the most difficult and expensive—residential, small commercial and nonsubstitutable industrial process, feedstock and plant protection requirements—it distinguishes among these high priority uses on the basis of safety and, at least implicitly, political considerations. While it may be more economically burdensome to convert some industrial uses to alternate fuels than to convert residential and small commercial uses, it would not be reasonable to impose upon the individual homeowner the burden of converting to an alternative fuel.

In contrast with curtailment decisions, designing pipeline rates is an entirely different type of administrative decision. The issue is not who will receive the available gas, but rather what rate each consumer will be required to pay for it. There is an interrelationship between these two decisions—the rules in the two contexts must be made consistent with one another and must be designed to further a cohesive policy—but the criteria used by the commission to make the first decision cannot be borrowed and applied in making the second. In no sense of the word does it “cost” more to serve consumers classified for purposes of curtailment in Priority Two or lower than it does to serve

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163. See note 117 supra.
164. Small volume residential and commercial uses cannot safely be curtailed, as a reduction of pressure in gas distribution lines creates a serious risk of explosions.
Priority One consumers. Thus, a rate structure based on factors relied upon to establish curtailment priorities would constitute an erroneous allocation of cost.

The second argument used to justify rate discrimination against lower priority consumers generally is supported neither by empirical evidence nor by judicial authority. It is far from clear that incremental pricing of supplemental gas supplies (whether or not subject to curtailment) will encourage lower priority customers either to conserve natural gas or to switch to the use of alternative fuels. As in the context of electricity, there is a dearth of empirical evidence on the relative demand elasticities for natural gas among consumers generally and among the various end use curtailment priorities specifically. Moreover, given current and projected deep levels of curtailment (where, for example, customers in only Priorities One and Two actually receive any gas on a consistent basis) perhaps the only meaningful elasticity comparisons could be made between the highest priorities. But even if these high priority use elasticities could be determined accurately, it is doubtful that they would support the incremental pricing assumption that industrial demand is more elastic than residential and commercial demand. Process, feedstock, and plant protection end uses, by definition, lack alternate fuel capability. It is improbable that any study would show a greater elasticity of demand for natural gas among these Priority Two customers than among the residential and small commercial users in Priority One.

166. "(6) Plant protection gas. Is defined as minimum volumes required to prevent physical harm to the plant facilities or danger to plant personnel when such protection cannot be afforded through the use of an alternate fuel. This includes the protection of such material in process as would otherwise be destroyed, but shall not include deliveries required to maintain plant production. For the purposes of this definition propane and other gaseous fuels shall not be considered alternate fuels.

"(7) Feedstock gas. Is defined as natural gas used as raw material for its chemical properties in creating an end product.

"(8) Process gas. Is defined as gas use for which alternate fuels are not technically feasible such as in applications requiring precise temperature controls and precise flame characteristics. For the purposes of this definition propane and other gaseous fuels shall not be considered alternate fuels." 18 C.F.R. § 2.78(c)(6)-(8).

167. Indeed, it may be more difficult and more expensive to convert many Priority 2 uses than it is to convert Priority 1 uses. Although pure end use principles may justify the classification of residential and small commercial uses in the very highest priority, such classification is lent additional support by a combination of social, administrative, political, and safety factors. While it is true, then, that, relative to the small individual amounts of gas conserved, the cost of converting or replacing millions of home furnaces, water heaters, dryers, and stoves would be astronomical, it is also true that the costs to some industrial feedstock and process uses of completely scrapping existing facilities and installing alternate energy facilities (even if technologically possible) may also
There is a similar lack of hard evidence that incremental pricing would significantly enhance conservation. To demonstrate such a connection would require a detailed comparison of the potential for conservation by residential and small commercial consumers with the potential for conservation by high priority industrial consumers. The additional incentive for conservation by industrial consumers which conceivably may be provided by incremental pricing may well be more than offset by the reduced incentive for conservation by residential and small commercial customers who will continue to receive gas at a price well below the pipeline's average cost of gas.

Moreover, even if it could be shown that incremental pricing of curtailable supplemental supplies encourages greater conservation and discourages use of natural gas by industrial consumers, the courts have held that the FPC cannot consider either of these factors in establishing the rates for an interstate pipeline. As the Supreme Court held in FPC v. Hope Natural Gas Company, "Moreover, we fail to find in the power to fix 'just and reasonable' rates the power to fix rates which will disallow or discourage resales for industrial use."168 And more recently, the Seventh Circuit, in Fuels Research Council, Inc. v. FPC, stated even more explicitly that "the Commission is not authorized to consider the end use of natural gas in a rate proceeding. . . . In rate proceedings under section 5(a), conservation is not a factor which the Commission can consider."169 It is possible, of course, that under today's chronic shortage conditions courts might reach a different conclusion. Yet even if conservation were a proper consideration in a rate proceeding, a proposal which confronted only industrial consumers with accurate price signals and the need for conservation could be counterproductive as well as discriminatory if it permitted millions of smaller nonindustrial users to continue using deceptively inexpensive gas without regard to their need for conservation.170

Conservation is an important objective for all consumers. Large volume use cannot be rationally equated with wasteful use, nor can

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169. 374 F.2d 842, 854 (7th Cir. 1967).
170. Since residential and small commercial demand is not presently being restrained inasmuch as curtailments do not generally reach those levels, it is even more important that the financial incentives to conserve natural gas not be diluted or totally eliminated.
small volume use be equated with efficient use. If, then, regulators insist on manipulating pricing policy to spur conservation, they cannot rely on such simplistic assumptions. Pricing incentives and disincentives, if properly considered in devising a rate structure, should be more sensitive to the conservation potential of all classes of customers, especially high priority industrial process and feedstock customers.

A preferable approach to encouraging conservation is the use of narrowly drawn measures which focus directly on problems of wasteful consumption. Such measures include legislative prohibitions of the use of natural gas for specific nonpremium uses, building code minimum requirements for insulation in housing and other buildings, peak-flattening incentives, and tax incentives which reward investment in energy saving equipment. These devices reflect a recognition of the need for conservation on the part of all consumers and a recognition that demand elasticity and conservation potential are not necessarily related to size or to whether a customer is "residential" or "industrial." Moreover, such measures avoid the kind of tinkering with the pricing system which can yield unduly discriminatory rates.

Incremental pricing of curtailable new gas supplies thus discriminates economically against lower priority consumers. In the absence of any reasonable justification for such treatment, which deviates from cost based rates and from the premise that consumers should pay equally for equal service, it may be that such discrimination is indeed "undue" and, therefore, is legal discrimination as well.171

3. Rolled-In Pricing

As has been discussed, it is not possible to isolate a particular class of customers which benefits from a new supply increment.172 It consequently appears to be discriminatory to impose the full cost of such supplies on only certain classes of customers, as is the case in most incremental pricing plans. Rather, all customers should be required to bear a proportionate share of the cost of new gas supplies. The traditional rolled-in pricing mechanism, through which new supplies are averaged into the pipeline's or distributor's total supply for purposes of pricing, permits the costs of such supplies to be borne fairly by all consumers who benefit from them.173

171. For a discussion of undue discrimination, see text accompanying notes 47-64 supra.


173. Analogizing from the natural gas context, an administrative judge has noted:
Rolled-in pricing provides high priority consumers with gas of the same physical and chemical properties as that provided to low priority consumers, but with a higher continuity of service. At the same time, the high priority consumer pays the same average cost for the commodity it receives as the low priority consumer. Thus, rolled-in pricing combined with end use curtailment treats high priority consumers fairly vis-à-vis lower priority consumers: the former receive a higher quality product (given that continuity of service is a major factor in determining the value of a commodity like natural gas) at the same rate as that charged to the latter for a lower quality product. In this manner, consumers share the proportionate costs of the service they receive. Such a rate structure does not discriminate and should not be discarded in favor of one which would have lower priority customers pay the highest rate for the gas they receive while being entitled to the lowest continuity of service.\textsuperscript{174}

"If an old, low-cost gas pipeline adds a new pipe or 'barrel' to double the capacity, but the new one is at today's higher prices, it would be unheard-of to assign the cheaper half to the old customers, or to the new ones, or to the retails, or to the wholesales. It is all rolled in together." Initial Decision of Administrative Judge on a Rate Increase Filing, at 37, Alabama Power Co., No. E-8851 (FPC, Oct. 22, 1976), \textit{citing} Battle Creek Gas Co. v. FPC, 281 F.2d 42 (D.C. Cir. 1960); United Gas Pipeline Co., 31 F.P.C. 1180, 1196 (1964). \textit{See also} P. D'Agostino, Impact of the Gas Supply Shortfall on Pricing, in Proceedings of the 1976 Symposium on Rate Design Problems of Regulated Industries 345 (Feb. 22-25, 1976). This paper outlines five reasons why LNG and SNG should be rolled in and not sold by pipelines or distributors on an incremental basis.

\textsuperscript{174} Just prior to publication, the FPC issued Opinion No. 786 in the remanded proceeding in Columbia LNG Corp., No. CP71-68, (FPC, Jan. 21, 1977). \textsuperscript{See note 148 supra.} In this opinion, the commission modifies Opinion Nos. 622 and 622-A to delete the incremental pricing requirement and thus permit the LNG supply to be sold by the pipeline company applicants on a rolled-in basis and to be made subject to curtailment. Columbia LNG Corp., \textit{supra} at 17. The commission emphasizes that the gas supply situation for the three pipeline applicants has deteriorated very rapidly since 1972, and concludes that the three controlling reasons stated in Opinion No. 622-A in 1972 for the adoption of incremental pricing are no longer "as convincing" in light of 1976 supply and price levels in conjunction with the commission's evolving curtailment policies. \textit{Id.} at 6, 7-10, 12.

In Opinion 622-A, the FPC had justified incremental pricing on three principal grounds: (1) such pricing would allow distributors to choose between purchasing new gas supplies from the pipelines and developing their own supplies; (2) customers in the lower curtailment priorities would benefit principally from the supplemental supplies, and thus they should bear the full cost of the LNG; and (3) incremental pricing would provide a better test of the potential market for the new supply. In Opinion No. 786, however, the commission realizes that, given the deteriorating supply and the threat of curtailment to customers in even the highest priorities, supplemental supplies would actually "operate as replacement gas which has been supplied from historic sources." \textit{Id.} at 12. It recognizes that the "incremental pricing mechanism established by Opinion No. 622-A would allow lower priority customers, who have contracted for the supplemental supply, to receive adequate service while higher priority customers would be
4. *Across-the-Board Incremental Pricing—A Possible Alternative*

Although the most popular incremental pricing proposals impose the cost of supplemental gas supplies only on industrial consumers, a recent proposal offered by the FPC's Office of Economics suggests a fairer approach. This proposal may offer greater opportunity for threatened by severe curtailment," in conflict with the commission's end use curtailment policy. The commission expressly admits that "it cannot guarantee that future Commissions would not allocate to the highest priority customers the supplemental supply should no other supply of natural gas exist within a market area" since assurance of noncurtailable supply "is not in the public interest" as the supply shortfall becomes more drastic. *Id.* at 12, 13. See text at notes 150-51 *supra.*

Citing the general advantages of rolled-in pricing (see text at note 145 *supra*) and the fact that it has employed rolled-in pricing throughout the history of natural gas regulation (see text at note 144 *supra*), the commission mentions some of the problems, discussed herein, with regard to incremental pricing. First, the commission notes that "a policy requiring the sale of supplemental supplies under separate noncurtailable incrementally priced rate schedules will result in reduced reliability of service for all customers." Pipelines would have reduced flexibility since each supply source would be tied to a separate group of customers, and distributors would have reduced flexibility to adjust to temporary interruptions in deliveries from a particular supply source. *Id.* at 14. See pp. 1130-31 *supra.* Second, the commission notes that, as additional supplemental supplies are made available through separate rate schedules, separate entitlements for each customer will evolve. See pp. 1133-34 *supra.* Third, the commission recognizes that incremental pricing subject to curtailment has even more serious problems, not the least of which is the fact that "financing of supplemental supply projects would be extremely difficult, if not impossible." *Id.* at 14. See pp. 1132-33 *supra.*

The commission thus concludes that the features of incremental pricing which it formerly found persuasive "are not predominant today." *Id.* at 15. An additional reason for this is the fact that costs of domestic supply are now more competitive with "unconventional" supplies, and the latter can no longer be viewed as "expensive exotic supply." "Once in the pipeline, the characteristics of the supplemental supply are indistinguishable from those from conventional sources." *Id.* at 14. See pp. 1135 *supra.* Opinion No. 786 recognizes that supplemental supplies are an integral part of the baseload supply for high priority customers and that "bly allowing these pipelines to roll-in in the LNG for pricing and allocation purposes, customers are afforded the greatest reliability of service." *Id.* at 16. High priority customers should thus bear part of the cost of supplemental supplies since such supplies give them greater assurance of continued supply for their immediate potential use in the face of curtailments, and they will ultimately have full benefit of these supplies as gas supply generally decreases. See pp. 1135-36 *supra.*

The commission takes care to emphasize in Opinion No. 786, however, that its determination that rolled-in pricing is proper in this proceeding "is not intended to signal a precedent to be applied in other supplemental supply projects . . . in the future. *Id.* at 17. Finding it impossible, because of the complexity of the pricing issue and the number of variable factors which affect it, to develop a uniform policy which would fit all circumstances, the commission states its intention to base future pricing decisions on the specific factors which are relevant in each particular supplemental supply proceeding. Hence, even if Opinion No. 786 is affirmed on appeal, the question whether supplemental gas supplies should be rolled in for pricing and allocation purposes remains very much a live issue.
achieving some of the stated goals of incremental cost pricing theory while at the same time recognizing the manner in which natural gas is actually consumed in the various curtailment categories.

The Office of Economics proposal suggests the following procedure for selling gas at the pipeline level:

1. Retain the existing system of curtailment priorities for gas from conventional sources.
2. Roll in supplemental supplies for curtailment purposes, but price such supplies incrementally.
3. Certificate supplemental projects subject to the conditions: (a) that the gas produced be offered to customers in order of decreasing priority category; and (b) that such gas be priced incrementally to the ultimate consumer at the burner tip.

An apparent obstacle to effective implementation of such a plan or of any federal plan aimed at conservation or allocation through rate structure reform is that the FPC does not currently have jurisdiction over pricing of even interstate gas at the burner tip. The viability of such a pricing and allocation plan would thus depend upon expansion of the commission's presently recognized jurisdiction or the full cooperation of state regulatory commissions. Such practical and legal considerations aside, the suggested plan, if sufficiently sensitive to end use distinctions not usually recognized by incremental pricing plans, has some theoretical appeal. This approach recognizes that supplemental gas cannot be marketed on a noncurtailable basis if the integrity of end use curtailment policy is to be protected. On the other hand, it also recognizes that it is not just the industrial consumer who should be faced with “proper” price signals with regard to the costs of producing and transporting expensive supplemental supplies.

175. As noted earlier, these goals include giving consumers more accurate price signals, encouraging conservation, and avoiding excess investment in energy facilities.

176. See Incremental Pricing, supra note 143.

177. Section 1(b) of the Natural Gas Act, provides: “The provisions of this chapter shall apply to the transportation of natural gas in interstate commerce, to the sale in interstate commerce of natural gas for resale for ultimate public consumption for domestic, commercial, industrial, or any other use, and to natural gas companies engaged in such transportation or sale, but shall not apply to any other transportation or sale of natural gas or to the local distribution of natural gas or to the facilities used for such distribution or to the production or gathering of natural gas.” 15 U.S.C. § 717(b) (1970).

177a. Industrial users are generally already aware of the necessity to conserve gas since many have already felt the squeeze of curtailments. Of the nineteen interstate pipelines affected by the Order Instituting Proceedings, Establishing Procedures and Providing for Hearings and Conferences to Evaluate the Impact of Natural Gas Shortages of Interstate Pipeline Companies, issued in Alabama-Tennessee Natural Gas Co., Docket
and small commercial consumers should also receive accurate price signals. Thus, rates should not be set for these classes at less than the average cost of gas; otherwise, they will have no incentive to lower thermostats, add insulation, or take other steps to conserve gas. Under such a plan, supplemental gas would be made available to existing high priority users first, charging them at the incremental rate for all volumes of gas taken over a predetermined entitlement to conventional supplies based perhaps on a test year. All supply volumes would be subject to curtailment, and, as is presently the policy, each curtailment priority would be completely curtailed as to both conventional and supplemental supplies before the next highest priority was curtailed at all. To the extent, however, that any consumer in any noncurtailed or incompletely curtailed priority category takes more than his administratively determined entitlement to conventional supply, he would be charged at the incremental rate. In this manner, not even the

Nos. RP76-116 (FPC, July 20, 1976), fourteen reported supply deficiencies in excess of 25% of firm requirements for November 1976 to March 1977. Projected deficiencies ranged from 18.99% to 50.98%. These figures are indicative of the significant extent to which lower priority customers have been and are being curtailed, creating an acute awareness on their part of the need to use the gas which is available to them in the most careful and efficient manner possible.

178. The Office of Economics itself recognizes in its report, "Entitlement plans have a number of potential inequities associated with them, inequities which might make them difficult to administer and result in the emergence of a cumbersome appeals mechanism." INCREMENTAL PRICING, supra note 143, at 31. If the plan determines a customer's quota of low cost conventional gas on the basis of his consumption patterns in a previous period, it will penalize those customers who made concerted conservation efforts during that period relative to those who made lesser efforts to conserve. Such a system also may fail to take account of changes in residences where the new occupants may require more or less gas than the previous occupants. The authors of the report recognize that some such inequities could be addressed by making the quota a function of more than one variable, but also that "[t]he introduction of complexities of this character are certain to generate administrative problems of formidable proportions." Id. at 32. The report suggests a number of possible general alternatives, such as creating separate quota formulae for residential, commercial, and industrial users, or making quotas a function of average degree days in any given locality. It concludes that quotas, however they are set, are likely to be a highly controversial issue. Id.

The Office of Economics report also notes that pipelines and distributors are likely to resist a marketing scheme based on quotas inasmuch as it does not guarantee that they will be able to sell expensive supplemental supplies. (The same may be said generally for the reaction of investors in supplemental supply projects.) Consequently, the report suggests several possible resale plans which would permit a customer to sell its entitlements or perhaps receive a credit when its consumption was less than its quota.

Regardless of the precise methods selected, it appears that the administrative transaction costs of implementing the type of incremental pricing plan proposed in the Office of Economics report may be considerable. Accordingly, this factor must be given due weight in evaluation of this type of plan.
highest priority consumers are guaranteed an unlimited supply of inexpensive gas.

Such a plan treats all customers alike to the extent that it attempts to match up the cost of developing new gas supplies with those who actually consume the gas. Furthermore, it more accurately reflects what is known generally about the nature of consumer demand (but which is often ignored by rate reforms): not all industrial uses of natural gas are "low priority" and not all commercial uses or even residential uses (if apartment buildings with central furnaces are considered) are "high priority."

The attractiveness of the Office of Economics proposal stems from its adherence to the traditional goal of ratemaking—the matching of costs of service with the customers who benefit from that service to meet the utility's revenue requirements—even though the proposal deviates from the traditional average cost method of achieving that goal. Unlike the more commonly discussed incremental pricing proposals, this proposal has the potential to avoid the kind of discrimination involved in relying upon untested and probably inaccurate generalizations which impose the costs of additional supplies only upon selected customers. Although the current jurisdictional limits on the FPC and the administrative complexity previously mentioned present serious difficulties, this rate structure proposal merits further study.

C. End Use Rate Schedules

End use rate schedules would charge different rates to different end use customers and to distributors with different end use profiles regardless of the intensity or the volumetric level of their consumption. Although many of the arguments for and against this type of proposal are identical to those described in the discussion of rolled-in versus incremental pricing, a look at the procedural history of this reform and the issues which relate specifically to end use rate schedules is informative.

In 1975, the FPC issued a "Notice of Proposed Rulemaking With Request for Comments" in a rulemaking docket entitled End Use Rate Schedules. In it the commission announced that it had under consideration "a proposal to require that natural gas purchased for ultimate

179. See text accompanying notes 143-73 supra.
utilization or consumption in various classes of usage be sold under separate pipeline contracts and rate schedules."\textsuperscript{181} Of the 273 parties which responded to the notice, 264 parties—including interstate pipelines, natural gas consumers, trade associations, gas distributors, state utility commissions, and even two offices of the FPC—filed comments opposing the proposal.

Postulating that "substantial amounts of natural gas are still being sold for industrial consumption at rates which understate both the cost and the value of the gas,"\textsuperscript{182} the commission found it "apparent" that simply increasing the cost of natural gas to industrial consumers through the limited means of altering the demand-commodity relationship,\textsuperscript{183} would not sufficiently reduce industrial consumption. Consequently, it determined that "presently available, presently deliverable natural gas supplies [should] be dedicated, as a matter of priority, to residential and commercial needs on an end use basis."\textsuperscript{184} In short, the commission proposed that a policy decision should be made that all gas purchased under contracts dated before 1973 be allocated to residential and commercial consumers and all gas purchased under contracts dated after 1972 be allocated to industrial customers. Abandoning any pretense of basing rates on cost, be they average, marginal, or incremental, the commission sought to insure that industrial consumers would bear the full costs of all the more recent higher priced supplies.\textsuperscript{185}

This approach fails to distinguish between high and low priority commercial and industrial uses and produces results directly contrary to the goal of end use curtailment plans—to require conversion to alternate fuels by those consumers for whom it is economically most feasible.\textsuperscript{186} Under the end use rate proposal, large commercial boilers which, except for the label, are indistinguishable from low priority in-

\textsuperscript{181} Id. at 1.

\textsuperscript{182} Id. at 2.

\textsuperscript{183} See text accompanying notes 124-42 supra.

\textsuperscript{184} Notice of Proposed Rulemaking with Request for Comments at 2-6, End Use Rate Schedules, No. RM75-19 (FPC, filed Feb. 20, 1975).

\textsuperscript{185} The notice also proposed that all fixed and variable costs (other than purchased gas) be determined on a 100% volumetric basis, thus completely eliminating the demand component of a two-part rate. Moreover, rate schedules for transportation, storage, and other special services (including LNG and SNG) were proposed to be designed to recover all costs directly attributable to rendition of such services and all other costs on a volumetric basis. Id. at 4. See text accompanying notes 124-42 supra with regard to the issue of two-part versus one-part rates.

\textsuperscript{186} See note 117 supra.
Industrial boilers and are most easily convertible to alternate fuels, would be permitted to continue to buy inexpensive gas. On the other hand, feedstock, process, and plant protection users would only be permitted to buy gas at premium rates which absorb the total costs of the more recent, more expensive supplies, merely because they are labeled "industrial." Even if end use rate schedules were found to have some general validity in theory, the Gordian division between industrial and nonindustrial customers proposed by the FPC could result in a significantly adverse impact upon individual high priority industrial consumers, upon the cost of their products, and upon the national economy. For example, to the extent that such premium industrial users would be able to maintain their level of production, such a proposal could have a severe inflationary effect. Due to the fact that many such users manufacture basic products used as components in other products (such as many chemical and metallurgical products), this inflationary effect would probably ripple through wide segments of the economy to the detriment of all consumers.

187. The commission has repeatedly found these uses to be nonsubstitutable. See Order No. 533 at 33, Policy with Respect to Certification of Pipeline Transportation Agreements, No. RM75-25 (FPC, Aug. 28, 1975). See also Transcontinental Gas Pipe Line Corp., No. CP76-279 (FPC, Aug. 18, 1976) (findings and order with regard to process use by Burlington Industries); Transcontinental Gas Pipe Line Corp., No. CP76-363 (FPC, Aug. 13, 1976) (findings and order with regard to process use by Pine Hall Brick & Pipe Co.); Transcontinental Gas Pipe Line Corp., No. CP76-241 (FPC, May 24, 1976) (findings and order with regard to process used by Nabisco, Inc. and Cone Mills Corp.).


189. "In sum, the proposed rule making will raise costs for industrial users during a time of inflation and serious unemployment. . . . The effect on unemployment, while hard to quantify, cannot be ignored. At a time when economic recovery is of paramount importance, the postulated benefits of eliminating two-part rates and subsidizing residential consumption must be examined thoroughly. There is no doubt that gas supplies for residential consumers must be reserved and protected—over time and not just for the next few heating seasons. To this end, the rule making is properly oriented. On the other hand, the blanket inclusion of all industrial users regardless of volume of use, type of use, availability of alternative energy sources (and their costs), technical considerations, and lack of locational differentiation seem questionable at least." Comments of the Office of Economics, Federal Power Commission, at 6, June 19, 1975, End Use Rate Schedules, No. RM75-19 (FPC, filed Feb. 20, 1975), quoted in Helman, A Lawyer Looks at the Problems of Gas Rate Design, PUB. UTILS. FORTNIGHTLY, Sept. 11, 1975, at 68, 69.
Certain industrial uses, however, cannot feasibly be converted to alternate fuels. Therefore, the commission’s stated objective of reducing industrial consumption of natural gas can be achieved by such users only through large absolute reductions in fuel or feedstock consumption, not by switching to an alternate fuel. There is a lack of statistical evidence concerning the degree to which such reductions in consumption can now be achieved without reducing productivity. The records in many curtailment proceedings before the FPC, however, establish that: (1) there already has been considerable conservation in the industrial sector in the face of often severe curtailments, and (2) the ability to achieve conservation in many industrial operations, particularly in process and feedstock uses, is severely limited. Thus, in many cases, a reduction in natural gas consumption would inevitably require a reduction in plant output and, perhaps, in employment as well.

End use rate structures based on the simplistic distinction between industrial and nonindustrial uses also discriminate against high priority industrial users insofar as it requires them to subsidize other high priority users. Under such plans, residential and commercial users would not be paying the full cost of the gas service which they receive, and the difference would thus have to be make up by all industrial users, including nonsubstitutable feedstock and process users. Since there is no justification based on efficient allocation of resources for having one high priority consumer subsidize another high priority con-

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190. See generally, J. Jensen & T. Stauffer, Implications of Natural Gas Consumption for the Implementation of End-Use Priority Programs (1971) (report to the General Counsel, General Motors Corp. from Arthur D. Little, Inc.).
191. See note 177a supra.
192. The commission has recognized the impact of reduced industrial use of natural gas by high priority industrial consumers on productivity, employment, and the economy generally: “The practical effect of curtailment of such high priority end uses may very well be a decrease in the production of these and other essential products and services. This decrease in production in turn will mean not only shortages but increased inflation as consumers offer to pay higher prices for the decreasing supply of goods and services available. Of equal importance is the fact that plant closings and production cutbacks may result in an increase in the number of workers laid off either temporarily or indefinitely. We are aware that curtailments of high priority uses pose a serious threat to the employment of thousands of workers.” Notice of Proposed Rulemaking at 6-7, No. RM75-25 (FPC, Apr. 4, 1975).
193. It bears repeating that, under end use curtailment priorities, a natural gas consumer is categorized as a high priority user because, in a free market situation, he would be willing to pay more for natural gas than a lower priority consumer, since it is less economically (or technologically) feasible for a high priority user to switch to an alternate fuel.
sumer, it is anomalous to require industrial feedstock and process users to subsidize residential and commercial users.\textsuperscript{194}

End use rate schedules could be designed to draw the price demarcation line below Priority Two rather than simply between industrial and nonindustrial customers. Thus, residential, small commercial, and industrial feedstock, process, and plant protection uses would be deemed to be receiving the older, less expensive supplies, and all other consumers would be deemed to be receiving the newer, higher priced gas. Such a rate structure, however, would also be seriously flawed. For example, such a structure would fail to address adequately the problems of growth and conservation among high priority users. By keeping the price of gas artificially low for such users, an end use rate structure would encourage growth in their requirements notwithstanding the natural gas shortage. Such low price could also induce significant new load attachments to the detriment of existing Priority Two industrial customers who would, consequently, then be rendered more vulnerable to curtailment. Eventually, such new attachments could expose even existing residential and small commercial consumers to curtailments.\textsuperscript{195}

Unlike many existing residential and small commercial consumers, potential new residential and commercial users are not “locked-in” to the use of natural gas.\textsuperscript{196} Since no capital investment has been made in fuel facilities, they face entirely different economic choices compared to existing gas consumers.\textsuperscript{197} Existing high priority industrial

\textsuperscript{194}. It is particularly anomalous to require such high priority industrial users to subsidize large commercial boiler fuel users.


\textsuperscript{196}. Notice of Proposed Rulemaking With Request for Comments, at 5, End Use Rate Schedules, No. RM75-19 (FPC, filed Feb. 20, 1975).

\textsuperscript{197}. In view of the continuing decline in gas supply, unrestricted addition of new high priority load, whether or not through the maintenance of industrially-subsidized rates for residential and commercial customers, may undermine an end-use curtailment strategy. Merely because a particular use of natural gas deserves a high priority in a curtailment scheme, does not necessarily mean that new uses of this type should be added at the expense of service to existing uses. For example, while an existing residential or small commercial consumer would be required to incur undue expense to convert to an alternate fuel if curtailed, there are generally viable alternatives to natural gas for such consumers at the time of initial installation. Thus, withholding gas from these consumers does not necessarily involve any hardship to them or any added economic cost for the nation.

New natural gas service to new residential customers should not be added at the cost of deepening curtailments, especially to the economic producing sectors of the nation's economy, such as the industrial process and feedstock users. Such curtailments would force these existing high-priority consumers either (1) to substitute enormous
customers who may have no technically or economically feasible choice as to what energy source they can use should not be forced to subsidize potential new high priority residential and small commercial consumers who could choose at the outset to utilize an alternate source of energy. By the same token, existing high priority industrial process and feedstock uses which have been classified just below existing residential and small commercial uses for curtailment purposes, should not be made more vulnerable to curtailment by the designing of rates for residential and small commercial customers which stimulate even higher use among those classes.\footnote{198}

volumes of propane for the natural gas curtailed, thereby competing with essential agricultural and rural uses for the extremely limited supply of propane, or (2) to scrap their existing equipment and replace it entirely with completely new equipment designed to burn another fuel, if the technology for such equipment has been developed. The first option would place an intolerable burden on the limited supply of propane. The second option would require the unnecessary expenditure of enormous sums of capital, thereby imposing even greater burdens on the already overburdened capital markets.

Furthermore, a policy which allows new load additions while existing high priority customers suffer increasing curtailments raises serious equitable problems. Even without growth, curtailment—the taking away of gas from existing customers who have a contractual claim to it—runs afoul of traditional legal and equitable principles. It can hardly be considered fair to deny an existing high priority customer gas it is contractually entitled to while giving that gas (whether or not at discount prices) to a new customer who has neither any legal nor equitable entitlement to it. The unfairness of attaching new customers without a showing of truly unique needs becomes particularly apparent when it is considered that an existing pipeline customer seeking extraordinary relief from curtailment must satisfy a very rigorous burden of proof before he is permitted to secure volumes of gas to which he would be entitled but for curtailment. Texas Eastern Transmission Corp., No. RP74-39-3, Op. No. 716 (FPC, Dec. 16, 1974), aff'd sub nom. United States Steel Corp v. FPC, 533 F.2d 1217 (D.C. Cir. 1976). Even in taking away a customer's gas at the expiration of his contract, a pipeline acts unfairly if it cuts off gas to a user who has built his business around it in order to give it to a new user who never had any right or claim to it and who could install alternate fuel facilities. Statutory abandonment procedures were designed to protect existing users from just such actions. \textit{See} Initial Decision, Kansas-Nebraska Natural Gas Co., No. CP74-299 (FPC, Apr. 22, 1976).

It is clear that many new gas customers could use other sources such as oil or electricity, and that these proposed new high priority customers are, by their nature, customers which, once added to a natural gas system, cannot be curtailed without creating severe hardships. Furthermore, in light of projected shortages and deepening curtailments, the addition of such new customers would eventually mean curtailment of existing high-priority customers without alternate fuel capability. \textit{See} Bureau of Natural Gas, FPC, \textit{Staff Report: A Realistic View of U.S. Natural Gas Supply} (1974). Accordingly, an effective energy policy must place strict limitations on market expansion policies of pipelines and gas distribution companies. \textit{See} Northern Natural Gas Co., No. CP75-333, Op. No. 773 (FPC, Aug. 13, 1976). For example, before new load is attached to a system, it should be demonstrated that there are no feasible alternative fuels, no feasible alternate sources of gas, and adequate future supplies to protect high-priority customers.

\footnote{198. The imposition of restrictions or moratoria on additions of new customers is}
It may be noted further that artificially low nonindustrial rates may be illusory in the sense that they are relatively shortlived for residential and small commercial users. If all lower priority industrial consumption is priced out of the natural gas market, as is apparently intended by advocates of end use schedules, the full weight of high industrial prices will fall first on the smaller group of industrial users who cannot convert to alternate fuels. Such process, feedstock, and plant protection users will then be faced with the choice of either passing the increased costs on to their customers in the form of higher product prices or reducing, perhaps eliminating entirely, production of products which require natural gas. Some of these users will be unable to overcome the competitive disadvantage resulting from the high costs and will be forced to shut down, leaving an even smaller pool of high priority industrial customers to share the costs of the high priced gas. At the point at which all industrial use is priced out of the market, due to the requirement that it absorb the full cost of new gas supplies, residential and commercial users will experience a cataclysmic increase in the cost of their supply inasmuch as they will have to bear immediately the much higher average cost of all gas supplies. In short, when there are no longer any industrial users left in the market to subsidize residential and commercial consumers, those consumers' rates will jump dramatically, with potentially serious social and economic results.

Inasmuch as end use rate reforms, then, also deviate from cost of service principles and are not supported by evidence which might justify unequal treatment for equal service, the discrimination which results would appear to be "undue."

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199. Such development of events might profitably be compared with the impact produced by average cost pricing, under which there is a dampening of price fluctuations and all customers are permitted to absorb the higher cost of new gas supplies gradually over time in manageable small increments, adjusting to absorb minor increases in the cost of gas service each year. With only 8% of the present national gas supply being replaced each year with high priced supplemental supplies, it is unlikely that consumers will be faced with the hardship of being required to cope with rapid and substantial rate increases. See Consumers Power Company SNG Plan Proceedings (FEA, Nov. 26, 1976) (testimony of Jann W. Carpenter on behalf of General Motors Corp., at 9).

200. It bears emphasis at this point that this article's rejection of those rate design reforms which have suggested utilization of marginal or incremental cost pricing does
D. More Effective Alternatives for Allocating Natural Gas

In sum, the most commonly suggested rate structure reforms for the natural gas industry propose that rates be designed to impose higher gas prices upon "lower priority" consumers, while charging "higher priority" consumers prices below the average cost of the total gas supply. Whether termed "one-part rates," "incremental pricing," or "end use rate schedules," these proposals deviate significantly from traditional ratemaking principles and disrupt any rational approach to gas allocation.

The paramount objectives of efficient allocation of scarce natural gas resources, as well as encouragement of conservation, can and should be accomplished without myopic alteration of traditional ratemaking goals and methods. The most effective action to reduce the supply-demand gap in the natural gas industry would be to remove from federal regulation the rates at which producers of new supplies

not reflect rejection of some of the legitimate ratemaking goals which advocates of these theories seek to serve. The basic policy inherent in marginal and incremental pricing theories (referred to synonymously for purposes of the immediate discussion) is rooted in classic microeconomic theory: price should equal marginal cost in order to yield an optimal allocation of resources. This is achieved through providing the consumer with a price signal of the cost to the economy of any given-product so that he can rationally decide whether to spend his resources for that product or save them for some other use. The difficulty with most marginal pricing schemes, as they are suggested for the gas industry, is that they seriously compromise the theory, fall short of the stated goal, and create troublesome side effects as well. See, e.g., Southern Natural Gas Co., No. RP75-84 (FPC) in which one party, Atlanta Gas Light Company, recommended marginal cost pricing and a negative demand charge as a means of bringing pipeline revenues down to the allowable cost of service. See also Furbush, Rate Design Problems: A Lawyer's Point of View, PUB. UTILS. FORTNIGHTLY, Sept. 11, 1975, at 66-67. "[T]he use of price to distribute or redistribute income violates the basic rationale for the use of marginal pricing." Id.

The goal of confronting consumers of natural gas with accurate price signals is recognized in this article to be of great importance. The commonly suggested reforms, however, seek only to confront selected consumers with such signals, notwithstanding the economic facts that (1) all users of service in an integrated system are to some degree marginal users of the incremental commodity available to the system, and (2) all marginal users in the system must be confronted with the true cost of their consumption if incremental pricing is to be effective. See Northern Ill. Gas Co. SNG Plant Proceeding (FEA, filed Nov. 5, 1976) (testimony of Jann W. Carpenter on behalf of General Motors Corp, at 17); El Paso Alaska Co., Docket Nos. CP75-96 (FPC, Dec. 3, 1976) (Statement of Sierra Club, at 5); Frazier, Marginal Cost Pricing for Gas Service: Theory and Application, in FPC National Gas Survey Technical Advisory Task Force, Final Report on Transmission, Distribution & Storage: Rate Design, at 6 (1976) (draft chapter). For a discussion of marginal and incremental cost electric rates, see notes 10-64, 69-84 & accompanying text supra.
of natural gas can sell this gas to interstate pipelines. Deregulation would allow the current artificially depressed price of natural gas to rise to the level where consumers would receive more accurate price signals concerning the costs of producing and transporting new supplies. The market would likewise receive more realistic feedback as to what amount of economic resources should be devoted to the development of new supplies, given that the level of demand is no longer inflated by artificially low prices. As the price of natural gas rose to a level more reflective of its premium fuel and feedstock characteristics, only those consumers for whom gas is the only feasible alternative would continue to buy it. Those consumers whose demand for gas in the past had been dictated only by its relatively lower price would be impelled to convert to other, non-premium fuels. Of course, deregulation, at least at the wellhead, would require action by the Congress, but recent legislative proposals have been defeated. Moreover, to be completely effective, theoretically speaking, deregulation would have to extend not only to the price at which producers sell natural gas at the wellhead, but also to the price at which gas is sold to the ultimate consumer at the burner tip. However, even if the price of gas is not deregulated, the FPC's present curtailment policy based on end use is a more effective means to direct the allocation of available gas supplies. Moreover, if it is determined that certain low priority end uses, such as boiler fuel uses, are undesirable, the commission can exercise its authority to commence hearings for abandonment of such service, or Congress can prohibit it outright. Such methods are more appropriate and more effective in achieving the stated efficiency and allocation objectives than measures which propose to achieve them through abandonment of the most fundamental principle of ratemaking: each customer's rates should reflect the utility's cost of serving it. If that principle is adhered to, consumers will receive price signals comparable to those in the unregulated market, and thereby adjust their consumption accordingly. One-part rates, incremental pricing,


and end use schedules not only represent rejection of cost as the fundamental principle of ratemaking, but also fail to achieve their intended goal of efficiently allocating natural gas. Other more direct methods of allocation are available that do not require discriminatory pricing.

IV. Summary and Conclusion

The rate structure reforms discussed in this article are illustrative of a significant shift in ratemaking philosophy. Historically, regulatory commissions were established to protect consumers from the potential excesses of monopoly pricing. This role has broadened considerably; commissions now focus not only on the overall rate level sought by utilities, but also on the specific rate structure they employ to collect that revenue. The new ratemaking philosophy seeks to use rate structure as a vehicle to achieve varied social policy goals. While we affirm the importance of those broader objectives, we believe it is highly questionable whether changes in utility rate structures can effectively accomplish such goals; indeed, many of these goals may be more efficiently attained through alternate means.

Moreover, as we have seen, such changes in rate structure often conflict with the traditional goal of matching the costs incurred by the utility to those customers who impose them. Though most new rate structure reforms are purportedly "cost based," cost is defined in a new way. Rather than focusing on the total cost actually incurred by the utility, many rate structure reforms focus only on the utility's marginal or incremental costs. While there may be some theoretical validity for defining cost in this way, it is unrealistic to apply these definitions in a regulated market where revenue requirements are based on average cost and where competing substitutable goods are not priced at their marginal or incremental cost. A utility's revenue requirement is based on its total cost of service, not merely on the cost of supplying its last unit of output. Thus, a cost standard which results in all customers being charged a price for all units of consumption equal to the utility's cost of producing only the last unit of output, will, in an era of rising costs, result in excess revenue for the utility.

As has been shown, rate structure reforms based on marginal and incremental cost propose to deal with this problem in either of two ways: (1) in the electric industry, an elaborate system for rebating excess

205. See MacDonald v. FPC, 505 F.2d 355, 363 (D.C. Cir. 1974).
revenue must be developed; (2) in the gas industry, the new cost definition is selectively applied only to "lower priority" (mainly industrial) customers. In either case, the end result of these adjustments is emasculation of the economic theories on which they are based, economic and perhaps legal discrimination against some customers, and a form of taxation through ratemaking that results in wide deviations from cost based rates for the sake of various social welfare or energy related policy goals.

Although consideration of noncost factors enters into the ratemaking process, this article has expressed serious doubt as to whether such factors should constitute the foundation of utility rates, particularly when they do not serve any energy related goal. However, even assuming that it is within the regulatory commission's authority to deviate from cost based rates to achieve social welfare or energy related goals, it appears that the reforms discussed in this article fail to achieve their stated goal and can be accomplished more efficiently through other means. More specifically:

A. The stated goal of marginal cost pricing of electricity is the economic efficiency achieved when rates are set equal to marginal costs. As has been demonstrated, however, not all consumers can pay a rate equal to marginal cost without, in most cases, the utility collecting windfall profits to which it is not legally entitled. The theory of marginal cost pricing must, therefore, be severely compromised in actual practice in order to prevent such an overcollection of revenue (or undercollection) necessitating either major adjustments to true marginal pricing or selective application of marginal pricing among customers. Time-of-day and other peak load pricing devices, while usually associated with marginal cost pricing, can just as easily be employed with average cost pricing (using a future test year to reflect rising costs) and thus track more accurately the actual cost to the utility of serving its customers.207

B. Lifeline rates are intended to assist low income consumers by subsidizing their usage of a minimum quantity of energy. Such rates, however, fail to aid all low income consumers, and it is likely, under such a theory, that some low income users will be forced to subsidize some higher income users. The social welfare goal of subsidizing subsistence usage of energy by lower income consumers could be achieved more directly and more effectively through development of, for example, an energy stamp program. If a legislative judgment were

207. See text accompanying note 13 supra.
made that such subsidization is a desirable measure warranting the appropriation of tax revenues, a program of this kind could assure that low cost subsistence-level energy—gas, electric, coal, or whatever form of energy that was used—would be provided to those consumers in need of this assistance.

C. Conservation is the intended goal of inverted and flat energy rates; however, if conservation results in decreasing only the total amount of energy consumed without reducing system peak demand, under-utilization of the utility's facilities will result. By focusing only on energy consumption rather than peak demand, such rates often result in earnings erosion and provide an incentive for additional consumption in the early blocks of the rate. As a result, utilities are likely to return sooner for additional rate increases. Consumers may thus be rewarded for their conservation efforts with higher rates.\textsuperscript{208}

D. The stated goals of one-part (100 percent volumetric) rates, incremental pricing of supplemental supplies, and end-use rate schedules are (1) to confront consumers with accurate price signals, (2) to promote the efficient allocation of scarce natural gas resources, and (3) to discourage consumption of natural gas in uses which are deemed to be "inferior." While all three of these intended goals are important, these rate structure reforms do not accomplish them. On the contrary, such rate structures can potentially undermine important curtailment policies and discourage financing for supplemental gas supply projects; moreover, severe economic dislocation can result from rapid and substantial price increases to consumers who utilize natural gas in uses for which there is no economically—or technically—feasible alternative. Like its counterpart proposed in the design of electricity rates, incremental pricing of supplemental gas supplies would also necessarily result in overcollection of revenue if applied uniformly to all customers. To avoid this result, and to discourage "low priority" usage of gas, the commonly suggested incremental pricing scheme deviates from the pure economic theory and imposes incremental prices only on selected customers. Similarly, end-use rate schedules suffer from the same infirmities. In addition, by basing rates on end-use curtailment prin-

\textsuperscript{208}. Average cost rates, on the other hand, if calculated to reflect accurately a customer's actual share of the utility's fixed and variable costs (particularly if combined with time-of-day or other peak pricing rates), provide the customer with realistic price signals, thus encouraging conservation at the levels required. Moreover, if responsibility for fixed costs is properly assigned to all customers in the early blocks (or by means of a fixed monthly charge), desired conservation will not yield the undesirable consequences of revenue losses and subsequently even higher rates.
ciples, they do violence to those principles and, at the same time, charge higher prices for relatively inferior service. In contrast with these reforms, (1) rolling in the costs of new gas supplies allows consumers (all of whom benefit from such new, more expensive supplies) to adjust gradually to the higher average costs, while confronting them with price signals which accurately reflect the costs incurred in serving them; (2) rational curtailment policies, limitations on additions of new load, and, ultimately, deregulation will directly yield more efficient allocation of scarce resources to those uses which value it most highly; and (3) legislation to prohibit directly, for example, use of natural gas in large industrial boilers or for the generation of electricity will more effectively eliminate such wasteful usage of this premium fuel.

In short, the reforms examined in this article for the most part fail to achieve the broad social policy goals which they are intended to advance, and are at odds with the traditional ratemaking goal of matching consumers' rates with the costs incurred by the utility in serving them. The traditional goals are better served by rates based on average cost, and the broader social objectives are better served through such rates in conjunction with legislative and administrative programs which are narrowly drawn to advance such aims more directly and effectively.

Using a utility's actual costs of service as a basis for setting rates enables a reasonably objective cost standard to be employed. In the absence of such a standard, the power to establish just and reasonable rates is, in effect, transformed into the power to tax. Rates thus become an instrument of social policy to redistribute responsibility for the costs of producing energy in order to accomplish certain energy policy goals and to redistribute wealth.

Regulatory commissions usually are not vested with, nor accustomed to, an explicit power to tax. Furthermore, they have to date been subject to judicial review under only the most deferential of standards. Due to the popular reaction against rising utility rates, most commissions are especially vulnerable to political pressure. Thus, there is a great temptation to embrace certain rate structure reforms simply because they have a revenue impact that is politically acceptable to a majority of the regulators' constituents, without subjecting such reforms to sufficiently rigorous examination. To the extent these reforms do not achieve their intended goals, the rates which result may be unduly discriminatory.

The current shift in ratemaking philosophy towards a taxation approach results in rates based primarily on subjective consider-
ations. As a former Federal Power Commissioner has noted, such an approach moves ratemaking "into a shadow land where certainty and predictability simply cannot exist."209 Relatively speaking, cost based rates avoid such excursions because they are "objective, definable and predictable." This article supports the principle that rates should be cost based. It suggests, however, that, if the trend toward taxation through ratemaking is to continue, the following approach to rate making should be applied: (1) the underlying assumptions of any rate structure reform must be made explicit; (2) the validity of these assumptions must be supported by record evidence; and (3) the reform must actually be evaluated in terms of its capacity to achieve effectively its intended goals. Only then will the enormously expanded discretion of regulatory commissioners at least be capable of meaningful judicial review.

209. The apprehension felt by some at the prospect of transforming economic regulation into a wholly subjective process, in which cost principles are stretched and squeezed in order to fit them into the Procrustean bed of the social policy of the moment, has been articulated recently as follows: "By distortion of cost allocations, by the use of social values instead of economic criteria, it is certainly conceivable that utility rates can serve to effect a massive redistribution of dollars—not just between the industrial sector and the residential sector, but between different economic strata as well.

"If these changes are to come, it seems to me that they should come forthrightly through legislative or constitutional mandate: I am persuaded that the regulatory system has no business whatsoever in attempting to make and implement social judgments of the magnitude we are discussing.

"At the heart of my concern lies a nagging uneasiness that economic regulation is on the threshold of becoming something entirely different. I hold the view that rate cases, and certificate cases, should be decided by objective, definable, predictable standards. That, in short, administrative law should be governed by the rule of laws and not by the rule of man. When we introduce social considerations into the decisional process, we move from the objective to the subjective: when we begin to use utility rates to effect a redistribution of wealth, we have moved into a shadow land where certainty and predictability simply cannot exist." Moody, Natural Gas Pricing and Rate Design Issues, in Proceedings of the 1976 Symposium on Rate Design Problems of Regulated Industries 333 (Feb. 22-25, 1976).

[Editor's Note: This article went to press prior to the presentation of the President's 'National Energy Plan' in late April 1977.]