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ORIGINAL

Decision 82 08 016 AUG 4 - 1982

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of PACIFIC GAS AND ELECTRIC COMPANY for authority to revise its gas service tariff to offset the effect of increases in the price of gas from EL PASO NATURAL GAS COMPANY. (Gas)	Application 57124 (Filed March 3, 1977)
And Related Matters.	Application 57138 (Filed March 10, 1977)
	Application 57179 (Filed March 29, 1977)
	Application 57196 (Filed April 1, 1977)

Additional Appearances

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T. Holland, Attorneys at Law, for Owens-Corning Fiberglas Corporation; Burt Pines, City Attorney, by Edward Perez, Attorney at Law, for City of Los Angeles; George Agnost, City Attorney, by Leonard L. Snaider, Attorney at Law, for City of San Francisco; John Witt, City Attorney, by William Shaffran, Attorney at Law, for City of San Diego; William B. Hancock, for Cut Utility Rates Today (CURT); interested parties.

O P I N I O N

I. Introduction

In the spring of 1977, Pacific Gas and Electric Company (PG&E) filed Application (A.) 57124 and A.57138, Southern California Gas Company (SoCal) filed A.57196, and San Diego Gas & Electric Company (SDG&E) filed A.57179 seeking to offset the increased cost of natural gas. These matters were considered by the Commission and decided on July 12, 1977. The respective decisions are Decision (D.) 87585 (PG&E), D.87586 (SDG&E), and D.87587 (SoCal). In each of these decisions the utility was authorized essentially the revenues it requested.

The California Manufacturers Association (CMA), among others, petitioned the Commission for rehearing of these decisions, arguing that the adopted rate design was unlawful. Rehearing was denied.

CMA and others then sought review of these decisions by the California Supreme Court. The Supreme Court granted review and on May 26, 1979, these decisions were annulled and these matters remanded with the Commission directed "to hold further hearings on the appropriate method to spread the utilities' rate increase."

Depending on our decision, refunds and surcharges may be appropriate. The Supreme Court decisions are reported as CMA v PUC (1979) 24 Cal 3d 251 (SoCal and SDG&E) and its companion case CMA v PUC (1979) 24 Cal 3d 263 (PG&E). Together these Supreme Court decisions are referred to collectively as the CMA decision.

After six additional days of hearing in San Francisco and Los Angeles, these remanded proceedings were submitted pending opening and closing briefs. During the course of the rehearing evidence was offered by the Commission staff (staff), PG&E, SoCal, CMA, and Owens-Corning Fiberglas Corporation (Owens). Briefs were filed by each of these parties. General Motors indicated by letter that it adopts the CMA position as its own.

II. Background

The rate structures in D.87585, D.87586, and D.87587 were adopted in recognition of the need to encourage conservation. Although some parties urged that we consider such rate restructure only in general rate case proceedings, we recognized that the frequency and dollar impact of offset proceedings, vis-a-vis more infrequent general rate proceedings, provided an opportunity to "gradually move toward a conservation effective rate design."

The adopted rate design included five tiers for residential schedules, with the rate per therm increasing with each tier. We simplified the residential schedules by uniform lifeline commodity charges and customer charges, eliminating zone rates. For high priority commercial and industrial customers the rate was set at the highest residential rate. Low priority industrial rates were set with reference to the cost of alternate fuel, to "signal the trend of energy prices" and to prepare industry "as gas supply problems intensify and prices steeply escalate." The implementation of these rates was constrained by the revenue requirement to be spread in rates.

The CMA decision addresses a series of contentions. The court first affirmed the discretion of the Commission to make major policy decisions in offset proceedings, rejecting the claim that such judgments should be made only in general rate case proceedings. However, the court ruled that the major policy decision in these cases -- the rate restructure -- was not supported by sufficient findings of fact. The court stated:

> "The findings on the material issues are insufficient to justify the rate spread adopted. While the commission's asserted justification for changing its method of spreading rate increase is conservation of natural gas resources, neither finding nor evidence exists showing the method adopted will result in conserving more natural gas than would other proposed methods." (CMA v PUC (1979) 24 Cal 3d 251, 259.)

The decisions were annulled for lack of sufficient findings.

The court also discussed whether the adopted rates unduly discriminated against any particular class of customers, based on the standard of "cost of service." The court stated:

> ". . . Because the utility's revenue requirement is based on cost (expenses plus capital return) and because customer rates are designed to provide the revenue requirement, it is apparent that consideration by the commission of any factor other than cost will result in some customers paying less while others necessarily pay more than cost. Having discretion to consider factors other than cost, the commission must necessarily create some disparity among users." (CMA v PUC (1979) 24 Cal 3d 251, 261.)

The court indicated that whether such disparity has reached the plateau of arbitrary or discriminatory action can only be determined upon a more adequate record and sufficient findings following remand.

The utilities urged the court to provide that any relief granted any party should be prospective only. The court observed

that the utilities apparently feared that they would be required to refund the rate increases and be denied the increased revenue. The court found this fear unfounded, based on its holding in Southern Cal Edison v PUC (1978) Cal 3d 813 regarding retroactive ratemaking. Accordingly the court directed this Commission to hold further hearings on the appropriate method to spread the utilities' rate increases and depending on our determination, to order refunds and surcharges for the period involved.

III. Positions of the Parties

Staff, PG&E, SoCal, and SDG&E all support the rate designs originally adopted and recommended that the Commission reaffirm its original decisions. CMA and Owens oppose the rate restructure and instead contend that the rate increases should have been recovered by a uniform cents-per-therm rate spread. They contend that the adopted rate structure does not effectively promote conservation and that the adopted rates unlawfully discriminate against nonresidential customers.

IV. Discussion

A. Introduction

The original decisions relied on conservation as the basis for the adopted rate design without defining the term "conservation." The CMA decision uses the term in a particular context that leads the parties to examine its meaning. In the discussion that follows we settle this question.

All of the parties agree that conservation is a factor that may be taken into account in designing rates. However, they disagree over the implications of elasticity data and cost of service information, including marginal cost. These issues are discussed below.

B. Conservation

The Supreme Court appears to have equated "conservation" with the least use of natural gas, as indicated by the following statement by the court:

> "The fixed marketplace tells us that the higher the price, the higher the incentive to reduce consumption and therefore to conserve; conversely, that relatively lower prices generally provide a lower incentive to conserve. When alternative plans for spreading rates are compared to determine their conservation effects, it is apparent that any plan creating higher charges for one group must also allow lower charges for some other group, and thus each plan will provide greater incentive to conserve for some users but lesser incentive for others. Without some expert testimony or empirical data reflecting elasticity of need and demand for the various groups, it cannot be determined which plan will result in least usage." (CMA v PUC 24 Cal 3d 251, 259.)

Parties respond to this proposition in various ways.

Staff witness Dutcher responded to the court's decision by providing elasticity data. In preparing his report he addressed the definition of conservation, pointing out several different views. For his purposes he equated conservation with reduced consumption, stating:

> "It might be appropriate to point out that what I am doing here is equating reductions in consumption with conservation, and I am not exactly sure that is right, but this was because of the thrust of the remand was toward what was elasticity of demand and I am not entirely sure that, thinking it over, that conservation and elasticity of demand are precisely equitable [equatable] with each other.

> "So what I mean by promote the most conservation, I mean to say causes the greatest reduction in consumption." (Tr. 370.)

This same definition of conservation is adopted by implication by Owens in its brief.

Other parties find the least usage concept unduly restrictive. PG&E's witness Howard stated:

> "Least usage, however measured or defined should not be a criterion to judge the conservation orientation of rate design. When comparing alternate rate designs, conservation should be equated with the principle of allocative efficiency. Pricing serves, among other things, to communicate to customers the value of the fuel they are purchasing so that customers may determine for themselves how that fuel should be utilized." (Ex. R-10, p. 2.)

As discussed below, Howard finds elasticity data of limited value for evaluating the conservation effectiveness of rate design.

CMA argues that the definition of "conservation" has a major impact on the rate design adopted in furtherance of the conservation goal and on evidence offered to support the rate design. CMA states:

> "(M)ere reduction of use of gas is not conservation. ...(c)onservation means efficiency in use of gas or avoiding uses of gas which would not occur if the user were required to pay the cost incurred by the utility in serving the user." (CMA opening brief, p. 6.)

CMA's witness Burt elaborated on this point.

> "Conservation is not simply nonuse of a thing. In a rational economic and engineering application of the term, the proper definition is:
>
> > 'The efficient usage of a factor of production, considering the full cost and availability of other factors of production.'

> "The term 'factor' may have a broad application to such things as labor, capital, and materials or may refer to detailed breakdowns of any of these major areas. Whether considering tradeoffs between major factors or detailed action within a sector, the principle remains the same.
>
> "Simple non-use is not, per se, conservation. Non-use may result from substitution of a resource which is less efficient in the application at hand. A resource may be less efficient in its usage because its overall social cost is greater (per unit of production) or because it causes other factors of production to be less efficiently used." (Ex. R-10, p. 4.)

Burt noted that the Commission has consistently set low priority rates with reference to, but below, alternate fuel costs, indicating that the Commission did not intend the very substantial absolute reduction that would result from pricing gas above the cost of alternates.

Staff witness Cavagnaro also speaks in terms of "the most efficient allocation of gas" as the rate design objective. Like CMA, he considers "cost" an overriding consideration in evaluating conservation effectiveness. However, as discussed below, he and CMA disagree over which cost allocation method to use.

The original decisions used the term "conservation" without elaboration. We agree that the court apparently understood "conservation" to mean "least use." However, we did not intend to apply such a narrow construction to the term.

As pointed out by Burt, least use would be easily attained by pricing gas to interruptible customers above their cost of alternative fuel. We consistently sought to avoid such a result, as we do not equate fuel switching with conservation.

This Commission has stressed the importance of conservation for years. Our concern is based on the scarcity of resources--fuels and capital. In this context the efficient allocation of resources is a matter of overriding public interest. That efficient allocation is "conservation." Evaluation of conservation effectiveness necessarily requires consideration of "cost." The meaning of "cost" is discussed below.

C. Elasticity

As stated above, the court specifically noted the lack of "empirical data reflecting elasticity of need and demand for the various groups" supporting the adopted rate design. Staff, PG&E, SoCal, and CMA have each provided data in these proceedings. Each argues that the data support its position. However, none of the parties urged that the Commission rely solely on elasticity data in fashioning rate design.

Elasticity is the notion that as the price of a thing changes, so does the demand for it. The degree of elasticity is usually expressed as a decimal number derived from the percentage change in sales divided by the percent change in price. In the case of a price increase the expected reaction would be reduced demand, represented by a negative number. The further from zero, the greater the elasticity.

Staff witness Dutcher testified regarding elasticity calculations he performed, relying on data provided by each utility. He concludes:

> "For the entire state at a time as close to the decision as it was possible to get information, industrial/commercial class had the highest elasticity, while the residential class had the lowest. If elasticity of demand was to be the sole criterion for rate design in this proceeding, the entire increase would be allocated to the industrial class, possibly to the extent of decreasing other rates until the industrial rates were at or slightly below the cost of alternate fuel." (Ex. R-23, p.3.)

Dutcher did not recommend elasticity data be used as the "sole criterion" for rate design.

PG&E witness Martin testified regarding the price elasticities provided by PG&E to Dutcher. He explained the econometric techniques used to statistically analyze the relationship between natural gas requirements and factors known to determine demand, as well as the derivation of equation that describes natural gas requirements as a function of such independent variables as weather, seasonal conditions, demographic and economic conditions, and energy prices. The natural gas price elasticities that he estimated were -.34 for the residential sector, and -.65 for the commercial-industrial sector.

PG&E witness Howard provided later information regarding intraclass consumption responsiveness to price changes for gas for residential customers, based on the sales to a sample of customers, as distinguished from the results of forecasting models which estimate elasticities of aggregate sales over time. Using this method, the overall sensitivity to prices of both lifeline and nonlifeline customers was -0.307 for the period December 1975 through December 1979. Based on this study he found:

> "In every year since 1977, customers have shown a reduced demand for natural gas attributable to rate structure charges, as indicated by the short-term price elasticities. In terms of specific response to tiers, Table 3 shows the anticipated response of the average customer, by tier, of a one-cent increase in price. This suggests that not just the overall structure, but tiers, may be responsible for inducing usage reductions." (Ex. 28, p. 5.)

An aggregated model is incapable of revealing such response to the tier structure.

SoCal witness Rudkin testified regarding the price elasticities provided by SoCal to Dutcher. He explained the econometric techniques used to relate gas requirements to the real

marginal price of gas, the real price of competing fuels, heating degree days, production levels, and other factors which economic theory and industry experience have found to influence gas demand. His analysis led him to conclude that interruptible industrial customers are the most price-responsive.

CMA witness Burt critiqued the elasticity calculations of the other parties both generally and specifically. He warns that elasticity numbers are difficult to derive, are always imprecise, and must be regarded with great suspicion.

Concerning residential elasticities, Burt states:

> "The dramatically different rate forms adopted since 1975, together with the fact that previous rate increases tended to be less than the general increase in the cost of living, have made previous data of little practical value in developing elasticities. Until 1978, there were no significant changes in lifeline rates during a period when the general price level was rapidly rising, so the effective consumer perception was of price reduction." (Ex. R-20, pp. 10-11.)

Burt contends that the "effective" declining price of lifeline service must have had an impact on the perceptions of residential gas customers.

Regarding industrial elasticities, Burt warns:

> "With respect to elasticities, as in many other ways, the industrial class is <u>not</u> homogeneous.
>
> "The policy implication of this is that any assumptions about industrial responses to price changes will be subject to a wide range of exceptions. . . . Even if an accurate industrial elasticity were found and used as the basis for an action assumed to have a mild overall effect, this would not be the likely result." (Ex. R-20, pp. 21, 22.)

An overall minor impact upon most industrial users might be substantial for a few.

Owens did not offer direct evidence on elasticity data, but commented on the various showings in its brief. It cites Burt's testimony favorably and states:

> "On the PG&E system, the only witness who predicted total gas usage based on elasticity analysis concluded that inverted rates actually caused less conservation!" (Owens opening brief, p. 8.)

This statement reflects Owens' view that "conservation" means least usage.

Owens objects to Dutcher's elasticity calculations on the ground that Dutcher does not have a degree in economics or statistics and is not an expert in the field of economic forecasting. Owens states that Dutcher's lack of expertise was recognized by each of the utilities when responding to data requests. Therefore, Owens moves to strike Dutcher's testimony on demand elasticities for PG&E.

Owens' witness Duval testified regarding Owens' actual usage at its Santa Clara facility. His figures show that Owens' rate of gas conservation increased steadily over several years, reaching a peak in December 1977, then fell and leveled off in 1978 and 1979. Thus, following the original decisions in these matters, Owens' use increased. Owens apparently intends to suggest that if the rate increase had been lower, it would have conserved more.

Owens also relies on data regarding recorded gas usage data for both residential and general service customer groups compiled by the staff. Owens states these data show:

> "During the three and one-half years preceding the inverted rate decision...residential usage had declined markedly from a peak about the time of the Arab Oil Embargo. For the six months preceding the inverted rate decision in 1977, residential usage was declining sharply on the PG&E system. For the six months after the decision took effect, residential usage continued to decline at the same rate. Then in 1978, it actually rose and then fell gradually in 1979 and 1980. . . .

> "These charts demonstrate two facts about residential usage: first, the inverted rate decisions caused no change in usage rates during 1977. And in 1978, after the decisions had some time to impact the marketplace, residential usage actually rose.
>
> "Nonresidential gas usage on the PG&E system shows the same patterns..., namely, a marked decline between the 1973 Oil Embargo and early 1978, and then an increase, and subsequently leveling-off. During 1977 the rate of decline in usage remained the same, despite the issuance of the inverted rate decisions and actually rose or leveled-off during 1978." (Owens opening brief, pp. 6-7.)

Thus Owens contends that the original decisions had an actual impact opposite of that intended -- that customer usage actually increased or leveled off, instead of continuing to decline.

Having observed the wide differences of opinion regarding interpretation of elasticity data, we find that all parties agree that we should not rely solely on such data for rate design purposes.

PG&E states:

> "Elasticity by itself provides no insight into the appropriateness of rate levels. Elasticity only reflects the change in demand resulting from a change in price. It does not tell us if the starting or ending price is appropriate. That is not to say elasticity can't be a useful input to rate design if its limitations are recognized and it is not misused. But it must be one of many considerations." (PG&E opening brief, pp. 7-8.)

PG&E's sense of the appropriate considerations in this instance is discussed below.

Similarly, SoCal believes that elasticity should be only one criterion used in rate design. Specific factors identified by SoCal include:

> "...cost of service, conservation, efficient allocation of resources, revenue requirements, legislative mandates, public acceptance and value of service."

SoCal recommends that the Commission exercise its discretion in deciding which of the factors receives the greatest weight.

As stated above, CMA witness Burt warns that elasticity data must be viewed with suspicion. CMA states that "the setting of rates solely, or even primarily, on the basis of elasticities would be a foolhardy proposition." (CMA opening brief, p.18.) However, CMA claims that a thorough review of the record in this regard should cause reconsideration of the Commission's apparent assumptions regarding rate design.

Staff witness Cavagnaro agrees with Burt regarding the difficulty of deriving elasticity numbers, their imprecision, and their doubtful value for predicting future real-world response. He also observes that another major difficulty with the direct use of elasticity data is that they change with time and additional experience. In this regard he refers specifically to later information provided by SoCal and SDG&E that is substantially different than the data considered in Burt's testimony.

Owens cites these reservations expressed by Burt, Cavagnaro, and PG&E and adds its own, concluding "All parties agreed that demand elasticities should not be used to fashion rate designs on the PG&E system." (Owens opening brief, p. 14.)

As stated above, the court specifically referred to the lack of elasticity data in the original records. The parties have sought to rectify this omission by their showings in this proceeding. While we appreciate their efforts, we agree that elasticity should not be the basis of rate design.

The parties have made a number of points against relying on elasticity data. In the first place, their usefulness corresponds most closely to the notion that conservation means least usage, a principle that we rejected above. Secondly, it is too imprecise and unrefined to be reliable for large scale rate design judgments.

We do not mean to suggest that parties should simply give up trying to measure elasticity. Further efforts may well yield useful information, such as PG&E's findings regarding the effects of tiers on the residential class. Such studies may be offered in future proceedings.

Without judging the various methods applied in this proceeding, we observe that CMA's calculations of gas use exclude P-5 gas, supplied to electric utilities for generation of electricity. We find this omission inconsistent with the idea that conservation means the efficient allocation of resources, since the higher gas price would cause higher electric rates and reduced electric sales, assuming some electric elasticity. While it is true that the electric utility may still burn all of the available gas, it may burn it more efficiently or burn less fuel oil. Either results in conservation.

We reject Owens' contention that Dutcher's elasticity calculations should be stricken. Dutcher, who has a degree in mathematics and extensive experience in the Commission's Gas Branch of the Utilities Division, was subjected to extensive cross-examination disclosing the bases for his calculations. Contrary to Owens' assertions, PG&E witness Howard expressly addressed Dutcher's work in favorable terms, stating:

> "The method of analysis in that staff exhibit is one way price elasticities of the demand for gas can be used if one is trying to determine a rate design's impact on consumption." (Ex. R-10, p. 3.)

None of the utilities objected to Dutcher's method in their exhibits or briefs.

D. Conservation and Cost of Service

As stated above, "cost" is the central consideration in the efficient allocation of resources that is conservation. Cost is directly translated into "cost-effectiveness," the test of whether conservation investments make economic sense. The object of a conservation-oriented rate design is to accurately signal cost

information, so that the cost-effective choice is also the more efficient allocation of resources. Although all parties agree that cost should be taken into account in setting rates, there is substantial disagreement over how costs should be recognized.

Staff witness Cavagnaro recommends that rates be based on marginal cost, "the cost of supplying the next increment of supply." He states:

> "The most efficient allocation of gas should occur when the customer pays the resource (marginal) cost of gas. Since the marginal cost of new gas supplies exceeds the utility's average cost, some gas must be priced at less than the average cost if other gas is priced at or near the marginal cost." (Ex. R-6, p. 8.)

He supports the adopted rate design as implementing this concept, stating:

> "This has been accomplished by inverting the residential rates, pricing the lifeline rate at less than marginal cost and the nonlifeline residential rates and interruptible rates at levels approximating marginal cost." (Ex. R-6, p. 8.)

He characterizes these decisions as stages in the transition to inverted rates and more specific recognition of marginal costs, which he believes began in 1975.

Regarding alternate fuel costs, Cavagnaro states:

> "Alternate fuel costs have always been an important consideration; previously when marginal costs were less than the average cost and currently when marginal costs exceed average costs." (Ex. R-6, p. 5.)

He considers alternate fuel costs to be a reasonable proxy for marginal cost for the purpose of evaluating these decisions. (Tr. p. 570.)

In terms of the continuing relationship between marginal cost and alternate fuel prices, Cavagnaro points out that Canadian gas is priced by reference to a mix of No. 2 oil, No. 6 oil, and crude

oil, while utility supply planning criteria also compare the cost of future gas resources to the projected cost of residual fuel oil. If utilities are successful, he predicts the cost of alternate fuel will continue to be an important element in rate design. If not, then alternate fuels will become the primary source for interruptible customers.

Cavagnaro points out that the connection between gas supply and rate design has also been made at the federal level. In the Department of Energy (DOE) decision in Docket No. 77-001-LNG-ERA Opinion No. 1 regarding the importation of liquefied natural gas from Indonesia, the DOE stated as follows, at p. 35:

> "The Administrative Law Judge declined to impose an incremental pricing requirement at the retail level as a condition to the import, because there was no record evidence to support such a condition and because such a condition would be inconsistent with previous FPC decisions. We are not necessarily bound by FPC precedent in this proceeding and would not therefore hesitate to impose such a condition if it were in the public interest. We note, however, that the state of California is one of the few states which has adopted an inverted rate structure which takes a partial step toward placing the burden of paying for incremental supplies on those customers which will benefit from them. Two recent CPUC rate decisions -- PG&E Decision 87585 and SoCal Decision 87587 (both dated August 12, 1977) established rates for residential customers which increase from a low 'lifeline' rate with increased usage. The uniform rate for small commercial and industrial customers (Priorities 1 and 2) was established at the same level as the highest residential rate. Rates for large industrial customers (Priorities 3, 4, and 5) were established at levels closer to the cost of alternative fuels.
>
> "This retail price structure accomplishes many of the purposes which the DOE would

> seek to accomplish through an incremental pricing policy. Thus we find that this structure is designed to minimize the attractiveness of increased gas consumption, and hence will serve to minimize California's reliance on imports. Bearing in mind the experimental aspect of incremental pricing systems and California's pioneering lead, which promises to continue, we do not find it necessarily in the public interest to condition approval of this import on further changes in the retail rate structure."

The PG&E and SoCal decisions relied on by DOE to reach its conclusion are the same decisions that are the subject of this proceeding.

Cavagnaro also relies on a statement by Irwin M. Stelzer, President of NERA, Inc., on August 6, 1980:

> "A second source of optimism is the marginal cost of gas. While the cost of new supplies will undoubtedly exceed current average costs, the marginal cost of transmitting and distributing those supplies will be close to zero. The pipeline and distribution capacity already exist; the investment is sunk, its added use is almost costless. So the total economic cost of gas, delivered, will be very close to its supply price. While who in the production-distribution chain gets what portion of the total final price will be of interest to participants in the industry, the regulator will be in a position to let retail rates approximate marginal total costs without pricing gas out of most markets." (Ex. R-15, p. 3.)

Cavagnaro states that the marginal cost of gas will continue to exceed the average cost so long as some old gas remains under regulation. He contends that establishing rates based on marginal cost permits recovery of the utility's reasonable costs, while still providing a basis for establishing lifeline rates at less than marginal cost.

Cavagnaro characterizes the inverted rate schedule applied to residential customers as consistent with marginal cost pricing.

He predicts that as residential customers are better informed on energy matters and rate design, inverted rates will play an increasing role in promoting conservation. He states:

> "Under the Residential Conservation Service Program, California utilities energy audits will reflect cost-effectiveness calculations based on both the price customers pay for energy and the utilities' marginal cost. To the extent a residential customer is purchasing energy above lifeline quantities at an inverted rate, conservation will be more cost-effective from the customers' point of view. The California Energy Commission also takes the inverted rate structure into account in establishing weatherization standards for new buildings and appliance efficiency standards." (Ex. R-6, p. 8.)

As average cost approaches marginal cost, a higher proportion of residential sales would be made at marginal cost-based rates.

Cavagnaro concludes by offering the following criteria for rate design:

a. Interruptible rates based on alternate fuel prices, continuing the present distinction between No. 2 distillate fuel oil and No. 6 low sulfur fuel oil for priorities 3 and 4, and based on the electric utility's cost of alternate fuel for priority 5.

b. Establish the maximum residential rate at the marginal cost of gas, including some allowance for storage and transmission costs.

c. Establish inverted residential rates using three tiers, giving consideration to dividing the space heating allowance into two blocks.

d. Establish firm nonresidential service at a level near the marginal cost of gas.

e. Use present criteria for setting wholesale rates.

He finds the adopted rates reasonable as part of the transition toward such a marginal cost-based rate design.

PG&E witness Howard also supports the adopted rate design as related to gas supply. He points out that based on prevailing gas supply forecasts in 1977, PG&E was basing substantial curtailment of its low priority customers into the mid-1980s. The extent of possible curtailment depended on the availability of new supplies. In such conditions, Howard states:

> "The adoption of market clearing prices is essential to preserve the orderly operation of the supply system. This would represent an alternative to rationing and would result in market efficiency." (Ex. R-10, p. 3.)

He finds the adopted rate design reasonable in light of these conditions.

Market clearing prices establish an equilibrium between supply and demand. According to PG&E, for natural gas, market clearing prices are the cost of fuel oil. PG&E supports the use of alternate fuel prices for rate design purposes, stating:

> "When that price level is used for purposes of gas rate design, the rates signal the value of the gas to be approximately the same as an easily used substitute, fuel oil. Industrial customers who generally can use either fuel then make their consumption choices based on comparable value for these two fuels with comparable use. On the other hand, if the gas rate to low priority customers were set below the market clearing level of alternate fuel costs, the customers would definitely choose gas over oil to meet their energy needs. In times of shortages such as 1977, such a pricing policy would lead to over consumption of gas relative to the other available resource, oil, that can readily be used to satisfy the same needs for these customers. By pricing gas at the level of the alternate fuel, however, no such overwhelming preference for gas is created. Instead the industrial customer faces gas prices comparable to his alternate fuel price. As a result, his consumption decisions will achieve a better allocation between oil and gas.

> Oil will be used where appropriate and gas shortages will not be aggravated by a level of gas demand that has been stimulated simply because gas rates are significantly lower than oil prices." (PG&E opening brief, p. 10.)

Thus, the market is "cleared."

PG&E contends that alternate fuel prices are also appropriate for signaling the value of gas to customers in nonshortage conditions, because alternate fuel prices are one of PG&E's planning criteria for the acquisition of new gas supplies:

> "Since alternate fuel costs are the best current (approximation) of overall new future gas supply costs, they are a valid measure of the replacement value of gas today. Reflecting that value in today's price causes the consumer to face the value of fuel being consumed. Thus, his level of consumption should seek a level in balance with that value and neither over nor under utilize the resources." (PG&E opening brief, p. 11.)

PG&E considers such balanced use of the resource to be conservation.

PG&E also supports the application of inverted rates to the residential class. PG&E refers to the Miller-Warren Lifeline Act (Public Utilities Code § 739) as an expression of strong public policy in favor of holding down lifeline rates, while at the time of hearing there were no guidelines for implementing lifeline increases. In view of the uncertainty and the ability to meet the revenue requirement through increases in other rates, PG&E states that no increase in lifeline was reasonable. The certain result of no increase to lifeline was inversion of the residential rates.

PG&E claims that Howard's study of residential users confirms that residential users are responding to inverted rates by reducing their gas consumption. PG&E contends that a flat uniform increase to nonlifeline residential rates does not evoke that "extra response" whereby the customer can reduce his bill in a greater proportion than his consumption reduction.

In support of the specific residential rates adopted in the original decision, PG&E points out that the rate for the last tier was set near the alternate fuel level, reflecting the value of the gas. Rates for the other tiers were appropriately set lower, says PG&E, because of the long lag time for residential response to gas price increases.

The alleged long lag time is reflected in PG&E's gas requirements econometric model. The long lag time is used because a major part of residential consumers' reaction to price increases consists of adjusting their capital stock--replacing old appliances.

PG&E contends that industrial-commercial customers have a quicker response to rising gas prices that is reflected in a shorter lag time in the gas requirements forecasting model. PG&E argues that since residential customers are not able to adjust so quickly, the adopted rate design reasonably allowed them more time to adjust before their rates for nonlifeline purchases rose to alternate fuel levels.

PG&E further contends that P-2 rates were appropriately set at alternate fuel levels. PG&E argues that P-2 customers did not need an adjustment period because of their shorter lag time, as discussed above. Consequently high priority commercial and industrial customers could adjust to gas rates set at market clearing levels relatively quickly, so there was no reason to delay adoption of such rates.

SoCal witness Benz testified that the adopted rate design is adequately supported by conservation considerations. He points out that gas supply had declined 25 percent from 1971 to 1976. SoCal was actively pursuing new gas supplies from Indonesia, Alaska, Canada, and the lower 48 states. However, no major project was close to coming on line. He states that all customers received a signal concerning the increasing cost of gas under the adopted rate design. Benz would prefer that "cost of service" receive more weight in rate design than was accorded in this instance.

SDG&E argues that, based on the evidence in these proceedings, and an understanding of the results which the Commission sought to achieve in the 1977 decisions, the previously adopted rate

designs were reasonable and appropriate. SDG&E contends that, furthermore, the Commission acted reasonably when it acted uniformly statewide. SDG&E concludes that the rate designs adopted by the Commission in the original decisions are reasonably designed to achieve the goal of alerting the various customer classes to the forecast scarcity of natural gas and the need to conserve and consider alternate fuels.

CMA disagrees with the opinions expressed by Cavagnaro, Howard, and Benz. It characterizes their testimony as "after-the-fact apologies" for the adopted rate designs that are "offered now in an effort to shore up otherwise unsupported rate action."

Regarding Cavagnaro's testimony, CMA contends that:

> "There are a host of theoretical and practical problems which make virtually impossible the use of long-run marginal cost for natural gas rate design." (CMA opening brief, p. 35.)

CMA states that marginal cost is like price elasticity -- instinctively easy to understand but very difficult to apply. CMA argues that, although marginal cost pricing is alleged to duplicate the action of price in a free competitive market, in actual practice free markets of capital-intensive goods do not follow anything resembling marginal cost pricing. CMA witness Burt cites the steel industry as "the most spectacular example to the contrary." He contends:

> "If steel were priced as though it were produced from a new plant, it would be at least 30% higher in price. The government determined 'trigger' price which steel importers must meet is based upon the current cost of the product from efficient Japanese plants built a few years ago, the equivalent of embedded costs for an efficient utility."

Burt claims that if all capital-intensive goods were priced at their marginal cost, those goods could not be sold.

Burt states that the only "rational" way to impose marginal cost pricing is to charge the marginal cost to all users, treating

the excess revenue as a tax. CMA warns that for California to take this action in the absence of similar pricing throughout the United States and perhaps the world, the result would be disastrous for the State's economy. CMA cites the closing of four major tire manufacturing plants in California as a response to the very high cost of energy in California.

CMA also alleges practical problems with Cavagnaro's method. CMA argues that the long run marginal cost of gas is very difficult to estimate. It contends that Cavagnaro's approach depends on "the grossest sort of guesswork" to arrive at its intended price signals.

CMA further objects to Cavagnaro's method of applying marginal cost to the residential class. CMA complains that Cavagnaro has not explained why all sales in excess of lifeline are not priced at marginal cost. CMA states:

> "Clearly, if marginal costs are used and lifeline is somehow exempted, all residential sales in excess of lifeline must be priced at marginal cost. That Mr. Cavagnaro would not do so is simply further evidence that his argument is nothing more than a diversion to cover the fact of what had really happened in July 1977." (CMA opening brief, p. 38.)

CMA claims that the Commission simply shifted more of the revenue requirement responsibility of residential customers to nonresidential customers under the guise of promoting conservation.

CMA argues that Howard's market clearing price theory fails to explain the Commission's actions. Furthermore, CMA contends that his method, if applied, would violate the utilities' obligation to serve the public and the ratepayers' right to the protection of regulation.

CMA construes Howard's testimony to suggest the Commission intended to force low priority customers to shift to alternate fuels. CMA argues that, while the Commission may have had generalized concerns about declining gas supply, we did not raise low

priority rates to alternate fuel levels to cause customers to stop using gas. Had the Commission intended to make low priority customers shift, CMA suggests, we would have set the rates well in excess of alternate fuel levels.

Instead, CMA contends, the Commission's action was intended to assure that low priority sales were not lost. CMA argues that the Commission has consisently charged the maximum rate consistent with retention of lower priority sales. CMA states that the actual rationale is profit maximization, not market clearing prices.

CMA argues there was no need to use price as a rationing tool in July 1977. CMA points out that the Commission already had in place the gas priority system adopted in December 1979, in Case 9642. CMA contends that the priority system, which is based on the ability to convert to alternate fuels, does not support higher rates for low priority customers. CMA claims that if quality of service is considered, the level of service to low priority customers should be lower.

CMA argues that PG&E has failed to explain why rates for residential and commercial customers were not also set at the cost of their alternate fuel, referring to propane or electricity. CMA observes that the fifth tier residential rate, which the Commission equated with waste and inefficiency, was established below the rate for sales to priority 3 and 4 customers. From this CMA concludes "So much for the integrity of the conservation/allocative efficiency rationale."

CMA rejects PG&E's argument that the adopted rate design was appropriate in part because of the longer lag time exhibited by residential customers. CMA states that the Commission had not based the decision on this ground and could not have done so because there was no information on response time in the 1977 proceeding. CMA argues that there is still insufficient evidence to support the conclusion that residential customers have a longer lead time.

CMA contends that the use of price to force customers off the system would be clearly unlawful. CMA states that where the

public maintains a right to demand utility service, there exists a corresponding obligation on the utility's part to provide service at reasonable rates.

CMA states that this obligation is not without limits, but the limits are provided by the operation of the priority system. CMA claims:

> "To the extent that there is gas available to sell to low priority customers, those customers are entitled to all of the regulatory protection from excessive monopoly pricing that is afforded to other customers. Further, so long as gas is available, low priority customers are entitled to purchase and use that gas on the same utility basis as other customers."

As long as one remains a utility customer, CMA states, one is entitled to such service at just and reasonable rates.

CMA offered the testimony of Larry Willer, a consultant employed by Drazer-Brubaker & Associates, Inc., regarding cost of service as a consideration in rate design. In his opinion cost of service is controlling. Regarding cost of service and conservation he states:

> "Not only are the two concepts compatible but cost of service is conducive to conservation. If price is viewed as the factor which spurs conservation, then a rate design philosophy which shields many customers from the full cost increase they should bear, will discourage, rather than encourage conservation." (Ex. R-19, p.4.)

Based on his analysis, the adopted rate designs in these cases raised commercial and industrial rates substantially above the cost to serve such customers, while leaving residential rates substantially below the cost of service. He contends that the Commission has implied that conservation simply means less use by commercial and industrial customers, while ignoring the reduced incentive for residential customers to use gas wisely, resulting from rates below cost.

Willer bases his opinion on the results of a cost of service study performed by PG&E in conjunction with a general rate case. PG&E provided five analyses that differed in the treatment of demand-related costs for allocation purposes. In each case the cost of purchased gas, the largest single component of overall cost of service, is allocated on a volumetric basis, yielding an average cost of gas that is assigned to each customer class on a uniform basis. In Willer's opinion these results show that residential service was far underpriced, while commercial and industrial service were far overpriced. He reaches a similar opinion based on data supplied by SoCal.

Although Willer believes that cost of service should control rate design, he does not believe that cost of service evidence is required in offset cases. He states:

> "In an offset case, the cost increase being considered is the cost of purchased gas. It is almost universally considered that the cost of purchased gas is allocable to all customers on a volumetric basis. Thus, an increase in the cost of gas would be tracked by increasing all rates by a uniform cents-per-therm amount." (Ex. R-19, p. 5.)

Willer has no use for such concepts as incremental cost, avoided cost, and value of service.

CMA witness Burt supports the same approach to cost of service. He claims that the Commission has considered cost of service an important element in decision-making in the past, when the area of controversy was the manner in which fixed costs associated with capacity should be allocated. Burt states that CMA will now accept any rational method for allocation of capacity costs in order to focus attention on customer costs and gas costs. He does recall that there were times in the past "when alternate fuel costs were low enough" that fully allocated cost of service rates could not be collected from large industrial customers, but that rates were set that returned a profit for the utility. He does not "believe the utility should sell any gas on which they don't make a profit."

Owens contends that the disparity between rates for residential cusomers and nonresidential customers is unlawful. It refers to the different percent increases assigned to the various customer classes as well as the results of the cost of service studies offered by CMA. Owens claims that rates authorized for PG&E's residential customers were substantially below cost of service, while rates to nonresidential customers are clearly subsidizing residential customers, in violation of Public Utilities (PU) Code § 453.

Owens argues that no provision in the PU Code allows such disparate treatment. It claims that the Supreme Court declared that the lifeline legislation was no longer operative, while there has been no showing that the adopted rates "cause less usage overall (or more conservation) than any other proposed rate design."

Owens asserts that the rate structure is illogical and unrealistic. It refers to the priority system that provides for curtailment in times of shortage and states: "Natural gas uses which have priority as a matter of public policy should logically have that value expressed in their prices." (Owens opening brief, p. 19.) It claims that "the rates are not only discriminatory, they are arbitrary and deny equal protection of the laws to nonresidential customers." (Owens opening brief, pp. 19-20.)

Owens argues that the evidence does not support the use of alternate fuel prices. It characterizes Cavagnaro's testimony as:

> "...a classic example of the 'boot strap argument.' On the one hand, Mr. Cavagnaro states that the nonresidential rates were reasonable because they approximate the cost of alternate fuel (marginal cost of gas) which served as a signal of future gas cost increases. On the other hand, the staff points to the history of gas rate increases which show that gas rates, since 1977, have risen to levels just below alternate fuel costs."

Owens claims this result merely reflects that the Commission has deliberately tied gas rates to alternate fuel prices.

Owens asks "the essential question": what "legitimate" ratemaking goal justifies the use of alternate fuel prices or marginal cost as rate design criteria? Owens refers to the stated conservation purpose and replies: "Not one shred of evidence in this proceeding demonstrates that rates based on alternate fuel cost levels will promote more conservation than any other rate design." (Owens opening brief, p. 22.)

Owens interprets Cavagnaro, Howard, and Dutcher to have testified that "the inverted rates were designed to force interruptible customers to burn alternate fuels in lieu of natural gas, because of projected gas shortages." (Owens opening brief, p. 24.) Owens argues that such a rate design purpose is unlawful.

Owens states that the Legislature has enacted a comprehensive statute that allows the Commission to order curtailment of natural gas customers by way of predetermined priorities. Owens refers to PU Code § 2771, which provides:

> "The commission shall establish priorities among the types or categories of customers of every electrical corporation and every gas corporation, and among the uses of electricity or gas by such customers. The commission shall determine which of such customers and uses provide the most important public benefits and serve the greatest public need and shall categorize all other customers and uses in order of descending priority based upon these standards. The commission shall establish no such priority after the effective date of this chapter which would cause any reduction in the transmission of gas to California pursuant to any federal rule, order, or regulation."

Owens contends that the Legislature has not authorized the use of rate design to force curtailment. Instead, the Legislature has mandated only one method of curtailment--forced load reduction by priority. Owens claims that the single specified method implies an intent to exclude any other.

Owens further contends that rates based on alternate fuel prices discriminate unlawfully against customers with no alternate fuel capability. Owens states:

> "Because the customers are unable to switch to alternate fuels, they are forced to pay natural gas rates simply to keep their factories running. For such customers, the alternate fuel rationale is utterly meaningless. Since the customer cannot switch fuels, the 'price signal' referred to by staff witness can elicit no possible response. The price signal, in effect, becomes a price bludgeon." (Owens opening brief, p. 27.)

Citing its own conservation efforts, Owens claims to have been engaged in a conservation program for many years. "The conservation effort peaked immediately prior to the Commission's decision. After that decision, conservation results were actually reduced." Thus, Owens contends that it was penalized for its prior conservation efforts.

Owens concludes that the evidence clearly establishes that the rate increase should be spread using the uniform cents-per-therm method. Owens claims that this method reflects the cost of service and is the most equitable. Owens further contends that this method leads to the least overall usage, which Owens equates with conservation.

Staff witness Cavagnaro offered rebuttal testimony to CMA witnesses Willer and Burt. Cavagnaro labels what Willer calls "cost of service" as embedded or accounting cost allocation, which he believes is neither necessary nor appropriate. He disagrees with Willer's stated premise that a uniform volumetric basis is a noncontroversial way to allocate gas costs. He cites Commission decisions in 1959 and 1968 in which interruptible customers received less than the amount of a uniform cents-per-therm increase because of prevailing alternate fuel prices, as just two examples of other decisions not based on the uniform method.

Cavagnaro agrees with Burt that the Commission did not deliberately set low priority rates higher than alternate fuel prices. He does not agree that the utility has a duty to ensure interruptible customers are provided service. He believes the Commission did not require wholesale transfers of revenue requirement between customer classes, it simply imposed the principal burden of rate increases on interruptible customers to move their rates closer to alternate fuel prices.

Cavagnaro asserts that he did not initiate marginal cost pricing theory "to provide a new marginal cost rationale not considered by the Commission in July 1977" as alleged by Burt. Cavagnaro states that the conservation rationale for marginal cost pricing has been consistently expressed by the Commission since 1975.

Regarding alternate fuel prices as a reference for industrial rates, Cavagnaro points out that industrial customers have staff devoted to energy use who understand energy pricing. He states that considering such staff and the availability of alternate fuel, the Commission staff and the utilities have as yet been unable to devise a more equitable basis to recommend to the Commission than applying alternate fuel pricing to all interruptible use.

PG&E contends that CMA and Owens have grossly mischaracterized Howard's testimony. PG&E states:

> "They apparently believe that Mr. Howard was advocating a theory of ratemaking aimed at rationing supply through price in order to drive industrial customers off the gas system. Such is not the case. Mr. Howard simply points out that for allocative efficiency to exist, gas rates need to reflect the cost of alternatives and replacements such as fuel oil to prevent customers from undervaluing the product. Once the price causes the customer to evaluate the cost of gas in comparison to the cost of alternatives in making his demand decisions, demand and supply should come into balance." (PG&E reply brief, pp. 5-6.)

Thus, PG&E claims that market clearing prices are not intended to force customers off the system.

PG&E argues that the lifeline statute is another important rate design factor misinterpreted by Owens. PG&E points out that since 1977 the Legislature has enacted amendments to the lifeline statutory provisions extending additional lifeline allowances to supply the needs of customers dependent on life support systems. An additional allowance has also been provided for paraplegic and quadraplegic persons. PG&E argues that if the lifeline statute really had become inoperative as Owens claims, the Legislature would not have provided for these further allowances.

E. Compelling Considerations

Based on the foregoing we find that the record overwhelmingly supports the adopted rate designs. Therefore, we do not reach the further issues regarding the extent of refunds.

The parties agree that conservation may be properly taken into account in rate design. The parties agree that "cost" is an important element in setting conservation-effective rates. They disagree vigorously regarding allocation of costs. We find that the overriding consideration supporting the adopted rate designs is the relationship between gas supply policy and rate design policy, with its corresponding implications for cost allocation.

Gas supply is a matter of compelling national and state interest, manifested often in unmistakable terms such as the federal National Gas Policy Act (NGPA) of 1978 and the state Liquefied Natural Gas Terminal Act (LNG Act) of 1977. Cavagnaro, Howard, and Benz have each explained that the adopted rate designs are reasonable in light of prevailing supply considerations. We do not find any such relationship between gas supply policy and CMA's "cost of service" rate design.

Apparently no such relationship is intended by Burt:

"Q. Do you think there is any reasonable relationship between gas supply policy and rate design policy?

"A. Well, certainly the thing that I mentioned earlier, the utility and the Commission together in their proposing and approving have an obligation to consider the whole panoply of demand and not necessarily intend to meet every bit of demand but to consider what is likely to be their needed supply in an efficient distribution system.

"So with that I say certainly they are going to be constantly considering to some extent rate design because they are going to be considering what they can sell this supply for.

"So to that extent; obviously acquisition has a minor input to intended sales." (Tr. p. 901.)

A "minor input" to "some extent" is not what we have in mind.

Nor is the relationship between rate design and supply a new concept introduced suddenly in 1977. In fact, the relationship had long been recognized and applied.

The relationship is inherent in the nature of interruptible service, which originates from the opportunity that prevailed during the 1950s and 1960s to reduce average gas costs by expanding production and transmission facilities. As Cavagnaro points out, during that period the Commission set rates based on alternate fuel prices when the average cost of gas was higher than the cost of alternate fuel, which was in turn higher than the marginal cost, so that interruptible service contributed to recovery of fixed costs. The underlying principle has not changed. What has changed is that the marginal cost now exceeds the average cost.

As Cavagnaro points out, this Commission responded to these changing circumstances in 1975. By D.84721 in A.55687 (PG&E) we authorized PG&E to increase rates by nearly $250 million. We expressly recognized the relationship between rate design and gas supply. We stated:

"There will be more rate increases. Canada has announced its intention to continue to

raise the border price until it reaches the energy equivalent price of oil. Domestic suppliers will continue to raise the price to PG&E. Each of these increases will require a corresponding rate increase.

"Underlying all of these increases is the spreading shortage of natural gas. We have had curtailments; we can expect more. We have had to consider priorities among the various classes of gas customers for the purposes of allocating available gas between them. (Decision No. 83819). We are being asked to approve unique financing plans that would raise gas rates today for the purpose of obtaining possible future supplies. Our utilities are exploring various alternative sources of gas supply that are feasible only in the face of these higher prices and depleting supplies that are associated with existing sources.

"In this context, the important question is not whether we shall pay more for gas, but how should the increased prices be spread across the rate schedules. In this decision we depart dramatically from the typical rate structure that was based on the premises that gas was cheap and in abundant supply." (78 CPUC 536-537.)

The original decisions in these matters continue the "dramatic departure" that was signaled in that decision.

In D.84721 we also signaled our interest in marginal cost concepts. We stated:

"In simple terms, the highest rates should be paid by the lowest priority users, because the highest priced gas is for their benefit -- without that gas those users would have to find alternate fuels. But we cannot now impose a rate structure based on end use priorities because of the lack of a determination of those priorities. We do have matters pending in which that determination can be made. In the meantime we find that a reasonable basis for rates is a uniform commodity charge." (78 CPUC 537.)

This is an absolute repudiation of the "volumetric allocation" of purchased gas costs that Willer claims is not even controversial.

"Cost of service" as the term is used by CMA has never been controlling for rate design purposes. Given its premise--that the cost of gas is reasonably averaged among all customers--it leads obviously to the conclusion that large customers cost less to serve. This conclusion conflicts with the major statutory provisions--lifeline and the priority system.

Owens' assertion that lifeline was "inoperative" in 1977 is totally without foundation. All that the court indicated is that the statutory prohibition against raising the lifeline rate was no longer effective.

In the long run the concept of lifeline only makes sense in the context of inverted residential rates. If the nonlifeline rate is lower than the lifeline rate, then residential customers would seek lower, rather than larger, lifeline allowances. This would be inconsistent with the legislative action providing for larger lifeline allowances for certain special cases.

The inverted residential rate also enhances the cost-effectiveness of residential conservation investments because the savings can be measured in terms of the higher rates that would have been applied to use beyond lifeline. Coincidentally, gas saved by the high priority customer trickles down through the priority system and is available to lower priority users.

However, this latter principle is not without limitation, at least with regard to the foreseeable operation of the curtailment system in effect on the El Paso Natural Gas Company pipeline in 1977. Under a complicated nomination procedure the volumes of gas available to California were in part a function of demand east of California on the El Paso system. This procedure meant that if California conserved more gas at the high priority levels than did the east of California customers, some of the gas saved in California would be consumed east of California.

Although the overall residential contribution remained relatively unchanged in these decisions, the rates were restructured. In addition to the inversion, the zone rates were eliminated in favor of a uniform customer charge and commodity rates. As explained by Cavagnaro, this action is consistent with marginal cost principles and a rejection of embedded cost principles on which zone rates were based.

The priority system adopted under PU Code § 2771 has much greater implications for rate design than indicated by CMA and Owens, who would limit its impact to daily rationing during periods of shortage. The priority system allows cost allocation of gas supply choices among customer classes.

We could make a rigorous marginal cost calculation that would justify higher rates to the lower priority customers than were adopted in this decision. This conclusion is based on the assumption that fuel oil prices are a reasonable proxy for marginal gas costs. If LNG or synfuels are used for the calculation, as might have been reasonable in 1977, even higher rates could be set. However, alternate fuel prices represent a price ceiling for these customers and are reasonably used so long as they exceed the avoided cost so that low priority sales make a positive contribution to recovery of fixed costs.

As stated above gas supply is a matter of compelling state and national interest. In 1977 the California Legislature declared:

> "(a) That an adequate supply of natural gas is essential to the economy of California and to the health and welfare of its residents.
>
> "(b) That the importation of liquefied natural gas from south Alaska and Indonesia into California may be a significant means of assuring that adequate and reliable supplies of natural gas are obtained in sufficient quantities to meet the state's needs and to prevent natural gas shortages which would disrupt

> the state's economy, increase air pollution, and impose personal and financial hardships on all of the state's residents.
>
> "(c) That an initial liquefied natural gas terminal may currently be needed in order to permit the importation of sufficient natural gas to prevent shortages which have been predicted to occur in the early 1980's.
>
> "(d) That, in order to expedite the siting, construction, and operation of such liquefied natural gas terminal so that serious shortages of natural gas do not occur, it is necessary to vest exclusively in one state agency the authority to issue a single permit authorizing the location, construction, and operation of such terminal, and to establish specific time limits for a decision on applications for such permit." (PU Code Section 5551.)

In this context, a rate design that apparently enhanced our ability to obtain LNG was supported by a compelling state interest.

This is exactly the significance of the rate designs adopted in the original decisions. As pointed out by Cavagnaro, the DOE decided not to require incremental pricing in its approval of LNG imports into California because "California is one of the few states which has adopted an inverted rate structure which takes a partial step toward placing the burden of paying for incremental supplies on those customers which will benefit from them," referring to these specific decisions.

DOE expressly recognized the conservation effectiveness of the adopted rate design, finding that "this structure is designed to minimize the attractiveness of increased gas consumption, and hence will serve to minimize California reliance on imports." The notion of minimizing "the attractiveness of increased gas consumption" is consistent with the efficient allocation of resources theory of conservation. The object is not to curtail the use of gas, but to limit its use by price signals.

Of course, the gas supply situation has turned out more favorably than forecast. We have survived this long without LNG and without curtailment by paying a high price for gas. The additional volumes from foreign and domestic sources have cost dearly, even beyond the fuel oil equivalent price for some volumes.

The principle underlying our original decisions and the DOE-LNG decision is that customers who benefit from incremental supplies should pay for them. This principle has been implemented by Congress, which required incremental pricing for certain specified types of customers in enacting the NGPA. The NGPA also provides for the phased decontrol of natural gas prices, promoting the production of additional volumes of gas. These actions demonstrate that Congress shares our conviction that gas supply and rate design policies are related.

Under these conditions the proposition that residential customers are subsidized by nonresidential customers is totally without merit. In fact, the CMA position leads to exactly the opposite conclusion. Gas service to commercial and industrial customers would be subsidized by residential customers.

The CMA rate design would cause residential rates to be higher than otherwise in order to provide service to lower priority customers. This Commission did not sanction the husbanding of California gas for many years in order to supply interruptible customers with gas at rates far below its replacement cost.

CMA's analogy to the steel industry is inappropriate. A steel company is not a public utility and is not obliged to provide steel to CMA members, regardless of the cost of producing the steel. Presumably steel pricing reflects competition, between steel producers and with alternate materials, in the same way that deregulated natural gas competes with alternate fuels.

The concept of an interruptible customer reflects the interchangeability of gas and oil for large scale boiler fuel purposes, and the potential for competition between those two fuels. CMA's rate design policy repudiates the basic premise of interruptible service.

CMA's proposal results in rates substantially below the cost of alternate fuel for interruptible customers, inducing gas customers to burn gas for all their fuel requirements. Ironically, the perceived diminishing gas supply has allowed gas utilities to maintain interruptible service at a higher level than was intended when gas was cheap and abundant, because of the large storage capacity that was installed to replace the load equalizing function of interruptible service. Thus, priority four customers are served, even on the coldest winter day. But the competitive opportunity remains, and oil has displaced gas from time to time for some customers.

The CMA rate design would assure that the gas company would have a competitive edge over others offering to serve interruptible customers. In this context we find a close analogy between the problems of setting gas rates in the presence of competition and the problems of pricing competitive telecommunications services. In neither case should the utility enjoy a competitive advantage because of its large body of monopoly ratepayers.

Owens' assertion that the Commission intended to price interruptible customers off the gas system is unfounded and is refuted by CMA. Obviously if such was our intention the rate would have been set much higher, as pointed out by CMA. Further, if such was our intention the cost of service house of cards could not be constructed because there would be no interruptible sales to "subsidize" the residential customers.

Owens and CMA are both mistaken in their interpretation of Howard's testimony. We agree with PG&E that Howard's market clearing price theory is not a rationing method, but rather a means of reflecting the cost of alternatives or replacements.

Of course, for higher priority customers fuel oil is not an alternative. However, so long as gas competes with oil, fuel oil reasonably reflects the cost of replacement gas and for the purpose of this case is reasonably used as a proxy for marginal cost as well as the market clearing price. Unfortunately, the higher alternate fuel prices of high priority customers may become relevant in the future when gas is deregulated.

For residential customers, we have already discussed the lifeline legislation as a consideration constraining application of marginal cost-based rates. Another constraint is the lag time characterizing their ability to respond to price increases, as explained by PG&E. This second consideration is no longer operative following the passage of time. For several years we have set three tier residential rates, with the second tier equal to the high priority commercial/industrial rate, and the third tier substantially higher--the highest rate on the system.

There are no similar considerations constraining the application of marginal cost-based rates to high priority nonresidential customers. There is no basis in the record for insulating such customers from the replacement cost of gas--certainly there is no conservation purpose achieved. The only relevant constraint in these particular cases was the overall revenue requirement. The amount of the rate increases was not sufficient to raise all rates to the level of alternate fuel prices.

These decisions must be understood as transitional. In order to get from a rate design that reflected marginal costs less than average cost to a rate design reflecting marginal costs above average cost, some nonuniform increases were necessary. Given the revenue requirement constraint this could only occur in stages, unless some rates were substantially reduced. These decisions were neither the first nor the last stages in the transition.

The overwhelming consideration is gas supply. A low gas price is illusory if there's no gas. The higher price reflects the higher price necessary to secure gas supplies.

This is not an instance of an economic theory applied arbitrarily to gas customers. Conservation is a matter of national energy policy. The same theory that leads to alternate fuel based rates for interruptible gas customers supports avoided cost payments to industrial cogenerators of electricity. Efficient allocation of services is merely a slogan if we don't apply these principles consistently.

F. Other Matters

Subsequent to the court's decision reversing and remanding these matters this Commission granted rehearing in PG&E A.58469/70, (consolidated proceedings), D.90424. No action has been taken in that matter, pending resolution of this proceeding.

D.90424 continued the transition in gas rate design discussed above. We find the decision adequately supported by the original record and the evidence adduced in this proceeding. No party would benefit from further hearing. Therefore, we provide for a conclusion to that proceeding in the order that follows.

Findings of Fact

1. Conservation is a factor reasonably taken into account in designing rates.
2. Least use of gas is not conservation.
3. Conservation is the efficient allocation of resources.
4. Elasticity is the principle that as price changes, so does demand.
5. Elasticity data are difficult to derive, always imprecise, and not reliable indicators of real-world response.
6. Cost is the central consideration in the efficient allocation of resources.
7. Marginal cost is the cost of supplying the next increment of supply.
8. The cost of fuel oil is a reasonable proxy for marginal cost for this proceeding.
9. Market clearing prices establish an equilibrium between supply and demand.

10. For natural gas, market clearing prices are the cost of fuel oil (the primary alternate fuel).

11. Alternate fuel costs represent a reasonable approximation of marginal gas supply costs.

12. Residential customers reflect a long lag time for responding to gas price increases.

13. In 1977, gas supply conditions appeared likely to deteriorate progressively without new supplies.

14. Gas supply is a matter of compelling state and national interest.

15. Marginal cost-based rates are reasonable in light of prevailing gas supply conditions.

16. Market clearing prices are properly reflected in rates in light of prevailing gas supply conditions.

17. The relationship between gas supply policy and rate design policy has been recognized for years.

18. Rates for interruptible customers set by reference to alternate fuel prices are consistent with near term marginal cost and market clearing price principles.

19. The concept of lifeline is reasonable only in the context of inverted residential rates.

20. The elimination of zone rates is consistent with marginal cost theory.

21. The priority system allows cost allocation of gas supply choices among customer classes.

22. Alternate fuel-based rates for low priority customers place the burden of paying for incremental supplies on those customers who benefit from the supplies.

23. A cost of service study allocating gas costs uniformly to all customers on a volumetric basis discriminates against high priority (e.g. residential) customers.

24. The concept of interruptible customers reflects the interchangeability of gas and oil for large-scale boiler fuel purposes.

25. A "cost of service"-based rate design provides an unfair competitive advantage to the gas utility.

26. High priority nonresidential customers are reasonably charged rates based on marginal cost or market clearing price.

27. The adopted rates promote conservation.

Conclusions of Law

1. On May 16, 1979, Commission D.87585, D.87586, and D.87587 were reversed by the Supreme Court and remanded for further proceedings regarding rate design.

2. Owens' motion to strike Dutcher's testimony is without merit.

3. The adopted rate designs were favorably cited by the DOE as a basis for allowing LNG imports into California.

4. The adopted rate designs are consistent with the NGPA pricing provision.

5. Lifeline policy considerations remain operative.

6. The adopted rate designs are consistent with marginal cost and market clearing price principles.

7. The adopted rate designs are consistent with the gas service priority system.

8. The adopted rate designs are reasonable steps in the transition from the era of cheap gas and abundant supply to the era of expensive gas and diminishing supplies.

9. The rates adopted in each of those decisions were just and reasonable for the period such rates were in effect.

10. The rates adopted in D.90424 were just and reasonable for the period those rates were in effect.

O R D E R

IT IS ORDERED that:

1. The rates adopted in D.87585, D.87586, D.87587, and D.90424 were just and reasonably charged and collected. No further proceedings are required.

2. The rehearing of D.90424 in A.58469 and A.58470 is terminated and D.90424 is final.

This order is effective 30 days from today.

Dated AUG 4 1982, at San Francisco, California.

JOHN E. BRYSON
President
LEONARD M. GRIMES, JR.
VICTOR CALVO
PRISCILLA C. GREW
COMMISSIONERS

Commissioner Richard D. Gravelle, being necessarily absent, did not participate in the disposition of this proceeding.

I CERTIFY THAT THIS DECISION WAS APPROVED BY THE ABOVE COMMISSIONERS TODAY.

Joseph E. Bodovitz, Executive Director

10. For natural gas, market clearing prices are the cost of fuel oil (the primary alternate fuel).

11. Alternate fuel costs represent a reasonable approximation of marginal gas supply costs.

12. Residential customers reflect a long lag time for responding to gas price increases.

13. In 1977, gas supply conditions appeared likely to deteriorate progressively without new supplies.

14. Gas supply is a matter of compelling state and national interest.

15. Marginal cost-based rates are reasonable in light of prevailing gas supply conditions.

16. Market clearing prices are properly reflected in rates in light of prevailing gas supply conditions.

17. The relationship between gas supply policy and rate design policy has been recognized for years.

18. Rates for interruptible customers set by reference to alternate fuel prices are consistent with near term marginal cost and market clearing price principles.

19. The concept of residential only makes sense in the context of inverted lifeline rates.

20. The elimination of zone rates is consistent with marginal cost theory.

21. The priority system allows cost allocation of gas supply choices among customer classes.

22. Alternate fuel-based rates for low priority customers place the burden of paying for incremental supplies on those customers who benefit from the supplies.

23. A cost of service study allocating gas costs uniformly to all customers on a volumetric basis discriminates against high priority (e.g. residential) customers.

24. The concept of interruptible customers reflects the interchangeability of gas and oil for large-scale boiler fuel purposes.