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ORIGINAL

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of PACIFIC GAS AND ELECTRIC COMPANY for authority, among other things, to increase its rates and charges for electric and gas service. (Electric and Gas)	Application 60153 (Filed December 23, 1980)
In the Matter of the Application of PACIFIC GAS AND ELECTRIC COMPANY for authority to increase its electric rates and charges effective August 1, 1981, to establish an annual energy rate and to make certain other rate charges in accordance with the energy cost adjustment clause as modified by Decision No. 92496. (Electric)	Application 60616 (Filed June 2, 1981)

(See Appendix A for appearances.)

OPINION ON REHEARING

On December 30, 1981 we issued Decision (D.) 93887 in Application (A.) 60153, Pacific Gas and Electric Company's (PG&E) 1982 test year general rate case. After considering petitions for rehearing filed by several parties, we issued D.82-02-075 on February 17, 1982 and D.82-03-047 on March 2, 1982. D.82-02-075 granted rehearing on all electric rate design issues including, but

not limited to, elimination and spread of the customer charge, size of second tier, need for three tiers, and reexamination of the allocation methodology. D.82-03-047 granted rehearing on the issue of the appropriate discount to master meter customers. At the prehearing conference on this matter the methods for bill proration and expansion of Schedule A-21 were added to the list of issues.

Ten days of hearings were held on this proceeding beginning May 10, 1982. The matter was submitted with concurrent briefs which were due June 25, 1982.

The major subjects of this decision will be:

1. Allocation of the revenue requirement.
2. Rate design.
3. Prorationing.

Before beginning our discussion of these subjects, however, a short background discussion will be helpful.

At the January 1, 1982 rates PG&E's total electric department revenue requirement (base rates + energy cost adjustment clause (ECAC) rates + adjustments) was $5,067,319,000. Since January 1982 we have authorized several reductions in electric rates. These reductions were possible primarily due to the extremely favorable hydro season of 1981-1982. In fact we are still benefiting from last year's rainfall. The following table illustrates the decline in average total effective rates for each customer class.

Table 1

California Public Utilities Commission

Comparative Rates

PG&E	Rate (¢/kWh) 1-1-82	Rate (¢/kWh) 5-10-82	Rate (¢/kWh) 8-23-82
Residential			
Lifeline	7.1	5.8	5.6
Tier II	9.5	7.8	7.6
Tier III	12.9	10.6	10.2
Average Residential	8.7	7.2	6.8
Small Light & Power	9.9	8.3	8.2
Medium Light & Power	9.2	7.7	7.3
Large Light & Power	8.6	7.1	6.8
Agriculture	9.1	7.4	7.6
Average System	9.1	7.4	7.1
Below Avg. System Rate			
Average Residential	4.4%	2.7%	4.2%
Lifeline Rate	22.0%	21.6%	21.1%

In addition to this dramatic decline in rates, another event has taken place that will have far-reaching impact on future revenue allocation and rate design. The event was the passage of A.B. 2443 (Sher Baseline Bill) which is codified as Chapter 1541 Statutes 1982. The bill is designed to encourage conservation and simplify the lifeline program. Its provisions include the following:

1. Rate structures should be designed to promote conservation of scarce energy resources.
2. Inverted block structures are effective incentives for conservation.
3. The first block of an inverted residential rate structure must be between 75% and 85% of the system average rate.

For PG&E this bill must be fully implemented in rates which will be effective January 1, 1984.

Although this bill will not be fully implemented before January 1984, to provide a smooth transition, it is highly desirable that the allocation method and rate design we adopt in this decision be consistent with the Sher Bill.

Rate Implementation Procedures

Today we have issued several decisions which affect the rates and revenues of PG&E as follows:

1. A.82-06-08 and A.82-06-20 - August revision ECAC and Gas Purchase Agreement.
2. A.82-09-51 - December revision date ECAC.
3. Attrition allowance. (A.60153, attrition phase.)

To implement these decisions in an orderly fashion, this decision will develop the new electric rates which will be effective January 1, 1983. We take notice of the other decisions and of the revenue requirements developed in each. The total revenue requirement will then be spread to customer classes and rates will be developed in this decision.

Allocation of Revenue Requirement

A. Background

The background of the allocation controversy in this proceeding goes back to early 1981. Thus, all parties who have followed PG&E's rate cases should have a thorough acquaintance if not a complete understanding of the relevant proposals and issues and ultimate outcome.

In A.60225 (an ECAC proceeding) filed January 30, 1981, PG&E first proposed that marginal costs rather than the equal cents-per-kilowatt-hour (¢/kWh) be used to allocate the ECAC revenue

requirement. In our decision in that case we continued the equal ¢/kWh method but stated that we would consider other proposals in future proceedings.

In PG&E's general rate case (A.60153) Toward Utility Rate Normalization (TURN) provided testimony by Dr. Wells which introduced the concept of class marginal rates and recommended that they be considered as a factor in class revenue allocation.

Before a decision was due in A.60153, PG&E filed ECAC A.60616 in June 1981. PG&E originally proposed a marginal cost ECAC rate design but later withdrew the proposal. In A.60616 TURN again presented rate design testimony by Dr. Wells. In A.60616 Dr. Wells further developed his class marginal rate concept (CMR) and recommended his class marginal rate - class marginal cost (CMR-CMC) proposal whereby all customer classes would pay marginal rates that reflected an equal percentage of their respective marginal costs. In our decision in A.60616 we continued the equal ¢/kWh method of spreading the ECAC revenue requirement. At that time we felt that not all parties were fully conversant with TURN's rate design proposals. We therefore provided that further hearings would be held to give all parties an adequate opportunity to examine TURN's proposals and any other proposals that other parties might choose to bring forward.

In our D.93887 in PG&E's general rate case we adopted an "equal percent of the difference" (EPD) method of allocating base revenues. When we granted rehearing of D.93887 in A.60153, the two proceedings (A.60153 and A.60616) were consolidated in this proceeding.

B. Issues

This proceeding developed basically three major alternative allocation methods: (1) EPD, (2) equal percentage of marginal cost (EPMC), and (3) the CMR-CMC method. On top of these three alternatives was the further issue of whether the method should be used only for base revenues or for ECAC revenues as well. This brings up a related issue of how intervening ECAC increases or decreases will be handled.

C. Discussion

EPD is a method of reconciling the difference between revenues at full marginal cost and the revenue requirement. First, present class revenues at average rates are compared to revenues at marginal costs, and the difference between the present class average rate and class average marginal cost is determined. The class average rate for each is increased to meet the new revenue requirement in accordance with the magnitude of the difference between marginal cost and present revenues. The principal advantage of this method is that it moderates rate increases for those classes whose average rates were not close to their marginal cost. Also, this method ensures that all classes whose average rates are below marginal cost will incur some rate increase whenever an increase in rates is required. The major defect of the method is that it does not work equitably when rates are decreased.

PG&E was the proponent of this method in the reopened proceeding. However, in its brief PG&E changed its position and supported instead the EPMC method if total revenues are to be allocated. This is shown in the following excerpt from PG&E's brief:

> "However, the circumstances of this reopened proceeding seem to make it a propitious time to implement the equal percent of the marginal cost allocation method. Two factors which influence PGandE to recommend this change are: (1) the relatively close class revenue-to-marginal-cost relationships which would not require major increases to any class; and (2) the apparent inability of the EPD method to adapt to rate <u>decrease</u> situations. (Tr. 10267.)
>
> "The Commission has the opportunity to directly and straightforwardly equalize the revenue-to-cost relationship of the customer classes without disruption or delay. PGandE joins CRA and CMA in urging the Commission to seize this rare opportunity."

The EPMC is the second allocation method. It was advocated by the witness for the California Manufacturers Association (CMA) and the California Retailers Association (CRA). Under the EPMC method the total revenue (average rate) for each customer class is set at an equal percentage of the total revenues produced at marginal cost. With the EPMC method the average rates paid by each customer class have the same percentage relationship to its marginal costs. The EPMC method can be applied to both rate increases and decreases. Its application in this proceeding would result in a substantially greater decrease to nonresidential classes than to the residential class.

The last method to be discussed is also the most controversial. The CMR-CMC method was proposed by TURN's witness Dr. Wells. As shown in our background discussion, this method has been proposed over several proceedings. All parties have had an opportunity to cross-examine Dr. Wells at length several times. As its proponent, TURN offers in its brief a good description of the method.

> "CMR-CMC is relatively simple to explain in concept. Basically it operates to establish marginal rates for each of the various classes of customers that represent an equal percentage of the respective class marginal costs. The closer that percentage is to 100% of marginal costs, the more accurate the price signal to customers. The goal is to achieve as close an approximation as possible of the economically efficient pricing that would occur in a free, competitive market.
>
> "The marginal rate is the rate that customers face when they increase or decrease consumption by small amounts. When marginal rates equal marginal costs, customers will pay (or save) the true resource costs of their energy consumption decisions. Even if a customer is not aware of the rate structure itself, the effect of the marginal rate shows up in the monthly bill as a result of increases or decreases in usage.
>
> "Since rates are generally below marginal cost (MC) due to the utility's fixed revenue requirement, customers tend to consume more electricity than they would under full marginal cost pricing. Thus, conservation and economic efficiency are equivalent in the current context. (Ex. 217, Appendix B, pp. 14-15). The CMR-CMC method seeks to maximize both by equating marginal rates to marginal costs for all customers classes."

The CMR-CMC method produces lower average rates for the residential class than the EPMC method. The residential class is the only class whose marginal rate differs significantly from its average rate. The difference results because only the residential class has an inverted rate block schedule. The CMR-CMC method shifts a substantial portion of the revenue requirement from the residential class to the other customer classes.

Tables 2 and 3 shows the results using the three methods.

PG&E, CMA, CRA, and the California Farm Bureau Federation (Farm Bureau) all voiced criticism of the CMR-CMC method and recommended that it not be adopted.

The criticisms and responses to them were provided in the testimony of three professional economists:

1. Dr. Wells, proponent and defender of his CMR-CMC method, sponsored by TURN.
2. Dr. King, sponsored by CMA and CRA, the major critic of the method.
3. Robert Howard, employed and sponsored by PG&E, who provided limited criticism of the method.

The primary arguments against Dr. Wells' theory are: (1) that no individual customer actually pays the class marginal rate, (2) that the resulting revenue allocation is not "cost based", (3) that the slope of the rate inversion determines the CMR, (4) that it is very difficult to apply, and (5) that the results of this allocation shift a substantial amount of the support of the lifeline rate out of the residential class. We shall address each of these points in turn.

The first criticism is not appropriate because the CMR is a rate faced by the class as a whole rather than by individual customers. The CMR concept essentially answers the question what rate would the customer class face if it increased or decreased its consumption by a small amount. PG&E used a similar process in developing conservation cost-effectiveness.

The second accusation that the revenue allocation is not cost-based, while technically true, is also not appropriate. It is argued that we have always used cost in some form in allocating revenue. The fallacy, however, is in assuming that the allocation

step of the traditional three-step method (cost - allocation - rates) is necessary. The CMR-CMC arrives at rates without going through the allocation process. The class allocation is actually determined after the rates have been established. The criticism that the method is not cost-based is unfair. The rates are, in fact, cost-based. The marginal rates are set in direct relation to marginal cost. There is nothing that absolutely requires the allocation step. For example, our current gas rate design guidelines result directly in rates set in reference to marginal cost without ever going the preliminary allocation step.

A valid criticism of the method is that the slope of the rate inversion determines the CMR. The rate structure can be changed to modify the CMR and in turn alter the revenue allocation. Therefore, we agree with the criticism that the CMR-CMC method does not provide a useful guide for rate design and furthermore makes the allocation process unduly sensitive to the residential rate design.

Another problem with the method is that mechanically it is very difficult to apply. In addition, there is valid criticism that since the rate design determines the CMR, it is mandatory to establish the residential rate design before applying the formula.

Finally, the TURN methodology does shift a substantial amount of the support for the lifeline rate outside of the residential class. This is a major departure from our practice in the last several general rate decisions where we have set residential rates such that the average residential rate (taken as a weighted average based on usage levels within the three residential tiers) approximates the system average rate. This practice allows the residential class to support the lifeline discount which it enjoys. We think that this remains appropriate and do not choose to deviate from this principle.

After weighing the attributes and defects of the CMR-CMC and EPMC methods, we believe that on balance neither results in a substantial improvement over our existing allocation methodology.

The final issue is whether the allocation method should be applied to total effective rates or base rates only.

There was a general consensus during the hearing among PG&E, TURN, the staff, and CRA that if short-run marginal costs are used in a marginal cost method, then the method should be applied to total revenues rather than just to base revenues. We basically agree with this consensus position. After all, marginal energy cost is a major component of short-run marginal costs. Therefore it is only consistent to apply these marginal costs in allocating the energy-related revenue requirement (ECAC).

This choice would bring the cost-to-revenue relationship much closer. When we have applied marginal cost to base revenues in the past, the result has been that revenues at marginal cost levels have been almost twice the revenue requirement. If we applied marginal cost to the total requirement, we would be approaching a relationship of 90%. The resulting reconciliation would result in much less distortion in the relationship of marginal costs to rates.

The current EPD methodology does not, however, work when applied to rate decreases. Therefore, we will adopt rates for the decisions being signed today based on the approach adopted in D.93887. That is, we will use the EPD method to spread the increases associated with the attrition, ERAM, and AER, and will reduce rates due to the ECAC decrease on an equal ¢/kWh basis.

For the intervening offset proceedings, before the next general rate case, we acknowledge the desirability of setting total effective rates. However, we also realize that potential controversy

could arise in each proceeding regarding the numerous allocation issues. We prefer that the rate design portions of offset proceedings be noncontroversial. The methodology to be applied to revenue changes which take place before the next general rate case will be on an equal ¢/kWh basis.

We direct the staff and PG&E to develop a modification of the EPD method that will apply to the total effective rate and will also work for rate decreases. We also welcome proposals from other interested parties. We expect this methodology to be developed in PG&E's new general rate case (NOI 78).

Allocation Tables

The following tables are designed to illustrate our adopted allocation methodology as compared to the other two proposals. The first table (Table 2) shows sales, short-run marginal costs (D.93887), and present effective revenues at August 23, 1982 rates. The following three columns show the result under each method. Table 3 compares the results of each of the methods to present rates. The comparison is made by computing the class average rate and its percentage change from present rates.

The total revenue requirement is developed as follows:

1. ECAC = $ 476,040,000 - 4 months
   $1,478,733,000 - Annualized
   (A.82-09-51);
2. ERAM = $26,223,000 - 4 months
   $81,457,100 - Annualized
   (A.82-09-51);
3. AER = $88,074,000
   (A.82-06-08);
4. Attrition = $156,502,000
   (A.60153, Attrition Phase): and
5. Current base revenues.

TABLE 2

Allocation Comparison Table

Customer Class	Sales GWH	SRMC ¢/KWH	Present Effective Revenues	CRA EPMC	TURN CYR/CYC	Adopted EPD
Residential	18,575	10,265	1,264,401	1,261,831	1,102,652	1,191,542
Light and Power						
Small	4,632	10,324	378,567	316,469	337,486	357,901
Medium	12,904	10,233	948,022	873,858	931,893	900,311
Large	14,700	9,924	1,003,532	965,458	1,029,578	952,162
Agriculture	3,328	10,178	254,217	224,160	239,048	240,696
Railway	259	9,823	16,846	16,837	17,956	16,001
Subtotal	54,398	-	3,865,585	3,658,613	3,658,613	3,658,613
Public Authority	385	-	24,140	-	-	22,320
DWR	-	-	-	-	-	-
Street Lighting	363	-	52,324	-	-	53,064
Interdepartmental	131	-	9,464	-	-	8,949
CPUC Jurisdictional Sales Revenue	55,277	-	3,951,513	-	-	3,742,946
Other Revenues	0	-	15,302	-	-	15,302
Total CPUC Jurisdictional Revenues		-	3,966,815	-	-	3,758,248

Table 3

Results of Allocation Comparison

Customer Class	EPMC % Change	EPMC Avg. Rate	CMR-CMC % Change	CMR-CMC Avg. Rate	Adopted EPD % Change	Adopted EPD Avg. Rate
Residential	0.87	6.86	(11.85)	6.00	(4.74)	6.48
Light & Power						
Small	(15.50)	6.91	(9.89)	7.36	(4.76)	7.78
Medium	(6.83)	6.85	(0.64)	7.30	(4.01)	7.05
Large	(2.76)	6.64	3.70	7.08	(3.95)	6.56
Agriculture	(10.87)	6.81	(4.95)	7.26	(4.45)	7.30
Railway	1.03	6.57	7.73	7.01	(3.70)	6.26
Subtotal	(4.33)	6.80	(4.33)	6.80	(4.33)	6.80
Pub. Authority	(5.72)	5.85	-	-	6.72	5.85
DWR	-	-	-	-	-	-
Streetlighting	-	-	-	-	2.86	14.83
Interdept.	-	-	-	-	(4.48)	6.90
Total Juris.	(4.25)	6.85	(4.25)	6.85	(4.25)	6.85

(Red Figure)

Rate Design

During this proceeding, rate design issues were raised concerning residential, industrial, and agricultural customer classes. For the residential class, the major issues were (1) the number and size of tiers in the inverted block structure; (2) the reinstatement of the customer charge: and (3) implementation of residential time-of-use (TOU) rates. Within the industrial classes, the sole issue was to what extent the A-21 (TOU) schedule should be made available. In the agricultural class, the two issues were (1) prior overcollections and (2) the relationship between the PA-1 and PA-2X schedules. The remaining rate design issues concerned the form and the amount of the master meter discount for both gas and electric customers.

Two other issues dealing with lifeline allowan raised by the City of San Francisco and Residents for Af Power. The City of San Francisco proposed an additional lifeline heating allowance for the winter season. Residents for Affordable Power proposed additional lifeline allowances for the Sierra foothills where all-electric homes predominate. Neither proposal was suited for this rate design proceeding. Also, neither proposal contained sufficient evidence regarding minimum essential energy uses to warrant an extraordinary change in lifeline allowances. Finally, passage of A.B. 2443 (Sher Bill) mandates a complete reexamination of the size of the first tier, average usage, and climatic zones in PG&E's next general rate case which will be processed during 1983.

A. <u>Residential Tier Structure</u>

Before we begin our review of the issues and positions of the parties in this case, some preliminary comments are in order. There is probably no ideal rate design. Economic regulation must strive for a pricing structure that achieves maximum economic efficiency while minimizing major disruptions or disparities in the area of social equity. This is a very difficult job. It is further complicated by the fact that any existing rate design benefits different customers differently. Thus, any change will shift benefits, making some customers relatively better off and some relatively worse off. As long as our allocation scheme (we believe fairly) fixes the residential revenue requirement, there is no new rate design that can make everyone better off. We keep this in mind as we review the rate design change proposals before us.

CORRECTION

THIS DOCUMENT

HAS BEEN REPHOTOGRAPHED

TO ASSURE LEGIBILITY

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1. Size and Number of Tiers

The first major issue in rate design is whether the three-tier rate structure should be retained or replaced by a two-tier structure. The industrial, commercial, and agricultural users who participated in this proceeding, CRA, CMA, and Farm Bureau, recommended two tiers. PG&E also recommended the two-tier structure. The participating residential group (TURN) recommended continuation of the three-tier structure.

The faults of the three-tier system cited by its detractors are:

1. It is difficult to establish the proper size of the second tier in a three-tier system.
2. Because of high third tier rates, customers' total bills fluctuate widely during unstable weather conditions.
3. A three-tier rate structure does not promote conservation.

TURN points out in its brief that no residential consumers voiced a desire that a two-tier structure be adopted in this proceeding. TURN also established, through cross-examination, that 95% of the all-electric customers in climate band X (Sierra foothills) would have higher winter bills under a two- than under a three-tier structure because a higher second tier rate would be required to offset the revenue loss associated with elimination of the third tier. One of the most important points of the TURN argument is that the total residential rate design program must be considered when contemplating a change. We should look not only at the rate design, but also at indirect effects. One of the most important indirect effects of a rate design change is its impact on the cost-effectiveness and payback periods from the customer's point

of view of various conservation measures. Rate design is also an important incentive in the residential TOU program that we discuss later in this decision. Not only does rate design have important consequences for other programs, but the reverse is also true. Various other rate-related programs can have a mitigating influence on particular aspects of rate design. Such other programs could include (1) residential TOU rates, (2) interruptible residential service, (3) demand subscription service, and (4) balance payment plan.

In its brief (page 25) the staff seeks firm policy guidelines by posing the following questions:

> "Is conservation a greater goal than rate stabilization?
>
> "Are we striving for customer rate options or customer understanding of rate design, and are these goals mutually exclusive?"

While our rate structures do vary by utility, within each utility we have tried to achieve some consistency and continuity. With the changing nature of utility costs and the changing relationship between marginal and average cost, some change over time is inevitable if we are to strive for economic efficiency. Conservation remains the foundation of our rate structure. This premise is reinforced by the Sher Baseline Bill. On the other hand, other goals like rate stability and equity are also important. Concerning rate stability versus conservation, one could question our retention of a three-tier rate structure and authorization of the balanced payment plan. We do not think that these two actions are mutually exclusive. We recognize that at very high usage levels, a three-tier structure can cause bills to vary significantly: its

variability is unfortunately what makes it a good conservation signal. For some customers this represents an undue hardship which can be mitigated by the balanced bill payment plan. If a customer chooses this program, has the conservation signal been lost? We think not. Before choosing that plan the customer as made a conscious choice based on his circumstances. That customer should be considering (1) his usage level for an entire year, (2) the three-tier rate structure, (3) where his usage level falls in the three-tier structure, and (4) the degree of his bill instability in choosing the balanced bill payment plan. This information is provided on the monthly bills in order to make such analysis possible. Thus, we believe that the conservation signal does reach this customer. The same can be said for customers who choose the TOU rates.

With this broader perspective, resolution of the issue of the number of tiers in the residential rate structure is made easier. While recognizing that the difficult question of the size of the second tier will remain, we find that the three-tier system should be retained for reasons to be discussed below.

The next question posed by the staff is whether we are striving for customer options or customer understanding of rate design. We do not believe that these goals are mutually exclusive either, although we agree that they are separately and collectively far from easy to achieve. We ideally seek greater options for customers so that they can choose the optimum rate-service combination for their circumstances. We also believe that to choose a particular rate-service option, customers need to be well-informed on their rate designs. We have encouraged the bill format used by PG&E to provide a tool to assist customers in understanding the relationship of the level of usage to the total bill. The bill format in itself provides customers with information on their

marginal rate. With the rate structure and usage in each tier displayed on the customer's bill every month, the customer has information on his marginal rate, which we can only hope is used in making decisions on usage and on conservation. It is difficult to find ways to further promote such understanding, and we would welcome recommendations in the next PG&E general rate case.

The last question posed by the staff is whether we favor conservation more than rate stability. Conservation to the extent compatible with economic efficiency remains the foundation of our rate design but we favor programs to mitigate any undue hardship caused by rate instability. The primary benefit of a three-tier structure is its conservation effect.

The testimony of Dr. Wells, Dr. Acton, and PG&E witness Howard corroborate the view that a three-tier rate structure directly causes greater conservation than a two-tier structure. The testimony of Dr. Acton sponsored by Contra Costa County showed that in a large scale southern California experiment, price elasticity increased with higher usage levels.

'Dr. Wells has shown that the class marginal rates should be used in predicting demand. Dr. Wells' testimony also shows that a three-tier rate structure will generally produce a higher class marginal rate than a two-tier structure at a constant revenue requirement.

Howard, in conducting studies at our direction the last few years, has used a method of calculating the conservation effects of rate structure without the very controversial use of elasticity data. Howard has shown that a two-tier structure has more of a conservation effect than a declining rate structure. He also

testified that a three-tier would have more of a conservation effect than a two-tier structure. In A.82-06-08 Howard further developed the studies that he provided in A.60153. The further studies showed, and we found, that the three-tier conservation effect was about twice that of a two-tier structure.

Thus, while the criticism that a three-tier structure does not produce a conservation effect is clearly refuted, some of the other criticism appears more valid. The problems of widely fluctuating bills with variable weather conditions and unfairly high bills for large families result from usage being pushed into the third tier. If we eliminate the third tier, the weather problem would be lessened somewhat; but this would necessitate a higher second tier in order to recover sufficient revenues from the residential class. Thus, customers whose use previously ended in the second tier would have higher bills to subsidize those large users who were previously in the third tier. This would be unfair and would also reduce the conservation signal for large users. So, even though bills might be more stable with a change to two tiers, they would not necessarily be lower for many customers.

The problem of large families with large total usage or other nondiscretionary high usage is inherent in a rate structure that does not vary with household size. The participants in our proceeding have so far been unable or unwilling to advance a system of per-capita rates, and we note that such a system would be extremely difficult to administer as household size can be uncertain and subject to frequent change (e.g. births, deaths, students away part of the time, etc.).

We believe that the nondiscretionary high usage problem and weather-caused unstable bill problems are best solved by mitigation rather than by elimination of the third tier. In making this choice, we realize that there will always be some equity problems with any rate

structure. The methods available at this time to mitigate any third-tier problems are limited. One major variable that we can change to soften the impact of the third tier is the degree of inversion of the rates. Currently the second-tier rate is 35% greater than the first-tier rate, with the third-tier 35% greater than the second. If we decrease this difference between tiers, the impact of high third-tier rates will be softened. Unfortunately this change will not have other benefits such as suppressing peak demand, smoothing out PG&E's load curve, or encouraging conservation; however, this is one effective rate structure tool we have at this time to soften the impact of third-tier rates for all customers. The rate structure that we choose as reasonable at this time is a 30% differential in effective rates. This degree of inversion will produce a Tier I rate that is 80% of the system average rate and thus consistent with the Sher Baseline Bill. Also, any further reduction of the inversion slope would be too abrupt. This standard develops the following average rates from our revenue allocation shown in Table 2.

Tier I = 5.48¢/kWh
Tier II = 7.12¢/kWh
Tier III = 9.26¢/kWh.

Another variable that we could change to affect the rate structure is the size of the second tier. Prior to D.93887 the size of the second tier was equal to the lifeline allowance. D.93887 changed the second tier to be equal to a flat 300 kWh for all customers. In granting rehearing of D.93887, we increased the second tier to 300 kWh or 2/3 of the lifeline allowance, whichever was greater. This reduced the effect of our previous decision which forced many customers into the third tier whose usage previously ended in the second tier. On the other hand, there is no economic

analytical reason for the size of the second tier to be a function of the size of the first tier under the Miller-Warren Lifeline Act provisions. It appears that implementation of A.B. 2443 (Sher Bill) next year for PG&E will result in reanalysis of the size of the first tier which may also cause some change of the second tier. With all these changes which have either taken place or will probably take place in the future, we believe that the second tier should remain at its current size at this time.

2. Customer Charge

In D.93887 we eliminated the customer charge for PG&E. The revenue impact of the elimination was spread across lifeline sales. In granting rehearing of D.93887 we included the customer charge as an issue even though no parties raised it because we wanted further consideration by all parties of the propriety of the action. During the hearings in the rehearing of D.93887, staff witness Sipe proposed reinstating the customer charge in order to produce greater bill stability. The Farm Bureau joined in the staff's recommendation. PG&E, TURN, and the CEC all oppose reinstatement of the customer charge.

PG&E provided testimony showing that the customer charge produces an anticonservation effect. Also, PG&E reported extensive customer complaints and misunderstanding regarding the customer charge. PG&E's analysis of the alternative methods of reallocating the customer charge revenue showed that the method chosen in D.93887 was most equitable to the largest number of customers. PG&E's analysis also shows that reinstating the customer charge has little effect on bill stability.

The record in this proceeding also developed the fact that the customer charge basically results from embedded cost ratemaking. In a marginal cost system of ratemaking, the customer charge is out of place.

We will not reinstate the customer charge. Also, we will not change the method of distributing the previous customer charge revenues.

3. Residential TOU Rates

D.93887 authorized residential TOU rates on an experimental basis and directed PG&E to file a plan within 120 days. The Implementation Plan for Schedule D-7, dated April 30, 1982 was presented as Exhibit No. 205. The Contra Costa Board of Supervisors (Contra Costa) participated actively on this issue through introduction of the testimony of Jan Paul Acton on Optional Time of Day Rates for Residential Customers, Exhibits Nos. 207, 208, and 209.

Except for PG&E and Contra Costa, no other party presented technical evidence on this program. The program was commented on extensively in the staff brief. The staff recommended that the program be expanded as rapidly as possible with eligibility priorities based on average monthly usage levels which exceed 1,000 kWh per month. Solidarity for Utility Rate Justice (SURJ) expressed concern in its brief regarding revenue shifts resulting from the rate proposal. No other parties commented on the program or made recommendations in their briefs.

After submission of this proceeding, PG&E and Contra Costa submitted a Stipulation reporting their agreement on a program of TOU rates for residential subscribers. After a comprehensive review of PG&E's proposed advice letter which reflected the basis for the stipulation, the staff recommended that an advice letter be filed.

Upon consideration of Advice Letter 907-E filed August 20, 1982 and protests of SURJ and TURN, the Commission by Resolution E-1950 of October 6, 1982 authorized PG&E to implement Schedule D-7, Experimental Domestic Service Time-of-Use under the following conditions:

The Commission will not prejudice its decision in the forthcoming decision on electric rate design since the authority granted is limited to an experimental rate schedule which was ordered to be filed in D.93887 on December 30, 1981.

The Commission is limiting the program to three operating divisions and a total of 1,700 meters, and is providing for an experimental rate schedule that is optional to the customer.

PG&E shall monitor and evaluate, on an ongoing basis, the effects of the D-7 rate on the electricity usage of customers who choose this pricing arrangement.

In examining the size and extent of the program, we are principally concerned with the effectiveness of the program, the impact of the program on residential participants, and the impact of the program on other ratepayers. Based on an extensive experiment with residential rates of this type in Los Angeles, Jan Paul Acton presented the following estimated impacts in Exhibit 207.

Exhibit 207
Change in Use (kWh)

Total kWh/Mo.	Peak Change	Off Peak Change	Total Change
539	-12	12	0
948	-36	32	-4
1,040	-47	43	-4
1,142	-60	54	-6
1,253	-63	55	-8
1,446	-87	69	-18
1,693	-105	80	-24
2,176	-163	60	-103
3,145	-24	126	-115

Witness Acton testified that the Los Angeles studies found that, on average, households above 1,100 kWh per month adjusted their consumption sufficiently to justify the costs of a TOU meter. Witness Acton pointed out that other factors such as fairness and the regulatory objective of rates reflecting the underlying cost structure of the utility would still justify TOU rates for smaller users.

We adopt the eligibility criteria approved by Resolution 1950-E and limit the schedule to customers whose usage exceeds 12,000 kWh per year, except for experimentation with a limited number of lower usage customers. Preference will be given primarily to customers for whom no gas service is available, and, secondarily, to customers whose lifeline allowances exceed the basic allowance.

Following a staff recommendation, the advice letter stipulation provided an off-peak rate equal to the existing lifeline rate of 5.6¢/kWh and an on-peak rate for the stipulated noon to 6 p.m. period of 11.8¢ (2.1 to 1 ratio). We adopt the change in the rate ordered in our resolution to provide an off-peak rate slightly higher than the lifeline rate. We find the rate relationship 11.0¢/kWh on-peak for the noon to 6 p.m. time period and 5.6¢/kWh off-peak (2.0 to 1 ratio) and a $3 customer charge to cover special metering costs to be reasonable criteria to apply in updating the rate to the level of the average residential rate found reasonable in this proceeding. It should also be used in connection with any offset increases or decreases prior to the next PG&E general rate proceeding.

These rates compare to the inverted rates of 5.6¢ for lifeline usage, 7.6¢ for Tier II usage, and 10.2¢/kWh for Tier III in effect at the time the TOU rates were authorized. Monthly bills at various usage levels for the inverted rate and the optional TOU rates compare as follows for an all electric customer with air conditioning:

Usage Level (kWh)	Inverted Rates Monthly Bills		TOU*
	Summer	Winter	
0 (Cust. Chg.)	-	-	$ 3
720 (L.L.)	$ 40	-	52
1,290 (L.L.)	-	$ 72	91
1,500	107	88	105
2,500	209	173	173

*19.7% @ 11.0¢. 80.3% @ 5.8¢ = 6.8¢ Average Rate.

Monthly bills on the TOU rate are about equal to the bills from inverted rates at usage levels approximately two times the lifeline allowance - 1,500 kWh for the air conditioning summer bill and 2,500 kWh for the winter space heating bill. Therefore, at usage levels above about two times the lifeline allowance the residential user of large quantities of electricity can reduce his monthly bill by initially subscribing to the TOU rate. Rate benefits from the initial shift will result in revenue transfer to other ratepayers. An analogy would be a change in the size of the second tier for extended lifeline customers, which would be a benefit to large users. However, a TOU program is much more beneficial than the extension of a second tier allowance, because there will definitely be cost savings through load reduction and load shifting.

We believe this opportunity should be provided to users of large quantities of electricity throughout PG&E's service area. In D.93887 a year ago we approved annual expenditures covering approximately 10,000 residential TOU meters. The annual revenue transfer from 10,000 meters could be in a range of $2 to $2.5 million compared to projected residential revenues of $1,217 million and total system revenues of $3,821 million. We do not agree with SURJ's

conclusion that lifeline users would bear the brunt of such a shift. Under our adopted revenue allocation, the lifeline rate will be approximately 80% of the average system rate. All ratepayers will share in the cost savings resulting from load reduction and load shifting. The limitation of the program to three operating divisions and 1,700 meters as provided in our resolution is no longer justified.

It is essential for the evaluation of the effectiveness of the residential TOU rates that the utility keep records of its metered and billing data on time-differentiated energy sales and revenues for customers served under the residential TOU schedule(s) (Schedule D-7) in the manner prescribed in this order. Such records will enable the staff to perform an independent evaluation of the effectiveness of the residential TOU rates. Also, PG&E will be required to monitor and evaluate, on an ongoing basis, the effects of the D-7 rate on electricity usage. A showing on the initial effects shall be presented in PG&E's 1983 general rate proceeding.

Since we recognize that sufficient PG&E data for a comprehensive showing in 1983 cannot be accumulated, PG&E shall also provide data from the Los Angeles and other rate experiments, and shall express its views on the transferability of such research for our purposes. Contra Costa's showing on the effectiveness of such rates was very impressive but we wish to continue to examine the program on an experimental basis throughout PG&E's service area to the extent of the funding which we previously approved.

PG&E shall also file a report on program expenditures for 1982 and projected for 1983. Further expansion of the program in 1984 will be considered in the 1983 general rate proceeding.

B. Industrial Rate Design

The only issue which was raised concerned the extent to which Schedule A-21 should be made available to small customers. The A-21 schedule is currently available to customers with a monthly demand in excess of 500 kW. In D.93887 based on the recommendation of the staff, we directed that Schedule A-21 be made available to customers with demand below 500 kW. PG&E argues that we should reverse our decision on this issue and allow the A-21 schedule to be available only to customers above 500 kW.

The testimony of PG&E's witness shows that as many as 41,500 customers on schedules A-12 and A-1 would have lower bills simply by changing to the A-21 schedule without any change in usage patterns. The staff proposes to mitigate this situation by having the low demand customers buy their own meters. This proposal has merit but does not appear to be well thought out at this point. PG&E also points out that an experimental TOU program to assess the load management potential for these lower demand customers (A-20A, B, C, and D) is currently under way.

We agree with PG&E that Schedule A-21 should not be fully opened at this time. We are very interested, however, in extending the schedule. We believe that the next general rate case is the most appropriate forum in which to consider the suggestions of Dr. Acton and the staff on how to further extend the schedule to lower demand customers.

Master Meter Discount

Public Utilities (PU) Code § 739.5 requires utilities to provide a rate discount to mobilehome park and apartment building owners for the costs of providing submetered service to their tenants. D.93887 altered the amount of the discounts by eliminating

the customer charge. D.82-02-075 granted rehearing of D.93887 regarding the appropriate discount to apartment and mobilehome park owners. The issues raised are (1) the form of the discount and (2) the amount.

The discount can be either a flat amount or a percentage of lifeline sales. The consensus of the WMA, PG&E, and the staff was that whatever the form of the discount, it should be consistent for both gas (GS and GT) and electric customers (DS and DT). We agree; the discount will be applied as a percentage of lifeline sales.

The amount of the discount was contested by WMA and PG&E. The basic flaw in the record in this proceeding is that there were no up-to-date cost studies. The current amounts must be estimated from a study produced in 1977. The WMA recommends a 34% discount for mobilehome electricity (DT) and 30% for mobilehome park gas service (GT). PG&E recommends 32% for DT and 30% for GT service. It also recommends a 9% discount for apartment house electricity (DS) and a 16% discount for apartment house gas (GS). The difference in the recommendations results primarily from different weighting methods in averaging underground and overhead service provided by mobilehome parks. We endorse the more even method used by PG&E. We will therefore find that the resulting discounts, as proposed by PG&E, are reasonable.

Agricultural Rates

An agricultural electric TOU program was approved for PG&E in D.91107 dated December 19, 1979. The target goal was 6,375 participants with a 1980 test year expense level of $4,500,000. Agricultural rates were set at a level to recover $4,500,000 over and above the class allocated revenue requirement.

PG&E failed to acquire and install the TOU meters during the projected time period. Thus, PG&E collected more revenues from the agricultural class than it would have if no program had been authorized.

PG&E calculates the overcollection by comparing total class projected revenues and authorized expenses to total recorded revenues for the 1980-1981 period: PG&E calculates an overcollection of $1,937,166.

The staff estimates the overcollection due solely to the TOU program to be $8,205,424.

We will endorse the method proposed by the Farm Bureau at page 31 of its brief as follows:

> "Rather than the fairly complicated reconstruction of revenues attempted by Staff, Farm Bureau proposes a simpler method of calculating an amount to be refunded. There is no dispute the annual revenue loss to be made up by PA-1 customers was supposed to be $4,450,000. Likewise, the actual revenue loss for 1980 due to failure to transfer customers is agreed to be about $350,000. Therefore, the overcollected amount for 1980 should be $4,100,000 ($4,450,000 - $350,000). Since the program was about one-half implemented in 1981, the overcollected amount that year was $2,225,000 (1/2 x $4,450,000). The sum to be refunded is $6,325,000. ($4,100,000 plus $2,225,000.)"

As suggested by the Farm Bureau, the $6.3 million refund will be spread over 1983 through rates to current PA-1 and PA-2X customers. The demand charge should be lowered from $1.30/kW to 80¢/kW as suggested by PG&E. The remainder of the refund should be reflected in reduced energy rates.

In addition to the reduced demand charge, PG&E proposed that the on-/off-peak ratios be returned to the initial historical ratios in order to reinstate the original incentives to shift usage. The Farm Bureau acknowledges that the on-/off-peak ratios should be changed somewhat.

The PG&E proposal is consistent with our recent treatment of other industrial TOU rates where we have authorized level base rates and time varying ECAC rate with on-/off-peak ratios at their original levels. These proposals will be extended to the PA-2X rate schedule.

Prorationing

One last rate design issue raised during these proceedings concerned the method of prorationing bills during the seasonal lifeline changes. The TURN brief at pages 59 and 60 summarizes the issue as follows:

> "Lifeline space heating allowances are generally applicable only during the period from November 1 through April 30. Even those areas with a summer heating allotment have higher allowances during the winter period. The reverse situation applies for air conditioning. This means that bills which cover a period including either November 1 or May 1 are prorated to reflect the differing lifeline amounts.
>
> "PG & E's method prorates both customer usage and tier sizes in a seasonal transition period, based on the number of days before and after the lifeline adjustment date in that billing period. This approach assumes constant daily usage both before and after the transition date. (Ex. 204, Tab J, pp. 3-6.)
>
> "An alternate approach called the McKinney method was proposed by a PG & E customr in a 1979 complaint case. (C.10648.) That method makes no assumption at all about usage. It simply re-calculates a prorated lifeline (and 2nd tier) amount based on the number of days before and after the transition dates in the customer's billing period. Actual usage is then billed in accordance with the adjusted rate structure. (Tab J, pp. 8-10.)"

A third method, proposed by Mr. John Macri, is that a customer's lifeline allowance begin on his billing day nearest the lifeline change date and continue for a certain number of billing periods.

The controversy over prorating stems from technological and administrative limitations on utilities' ability to bill precisely. If customers could be billed on a daily basis there would be no need to proration seasonal lifeline allowance changes. Usage on April 30 would be billed according to the winter lifeline amount while usage on May 1 would be billed according to the summer lifeline amount. Obviously, the requisite metering technology does not exist on the PG&E system for this to happen.

Even if we were constrained to monthly meter reading and billing, we could still avoid the seasonal lifeline prorationing problem if all customers' meters could be read on the lifeline change dates, October 31 and April 30. Clearly, this is administratively infeasible absent an army of seasonal meter readers.

As long as uniform seasonal lifeline change dates are in place as they are today, there will be a need to proration because these seasonal lifeline dates will fall in the middle of many customers' billing periods. Starting with a single meter reading of usage covering a monthly billing cycle that includes a seasonal lifeline change, the prorationing method must make some kind of assumption about how much of the monthly usage occurred before the seasonal lifeline change and how much of it occurred after the lifeline change. The key issue is whether or not the usage assumption that is made creates any systematic bias for or against the prorationed customer in comparison with a customer that is not prorationed (because their billing occurs at or near the lifeline change date) or in comparison with our "daily billing" ideal.

PG&E's prorationing method assumes that usage is constant before and after the lifeline change date. Thus if a customer has an April 16 to May 15 bill, with the May 1 lifeline change date falling halfway through the billing period, PG&E would allocate half of the month's usage to the April tier structure (lifeline amount) and half to the May tier structure. PG&E argues that on average this constant usage assumption is reasonably accurate and fair.

TURN argues that on an average basis usage is not constant before and after the seasonal lifeline change and that by making the constant usage assumption PG&E is systematically overbilling prorationed customers. TURN argues, for example, that on an average basis gas usage can be expected to be declining from April to May as space heating needs decline.* Therefore, returning to our hypothetical April 16 - May 15 bill, there will be, on average, more usage in the April period (when the lifeline allowance is larger) and less in the May period (when the lifeline allowance is smaller). TURN argues that a constant usage assumption, in effect, takes some of the usage that occurred in April and accounts for it in May where, because of the smaller lifeline allowance, it is more likely to be pushed into a second tier rate.

TURN argues that we should adopt the McKinney method as an alternative prorationing method. According to TURN this method "makes no assumption at all about usage." This is incorrect. The McKinney method implicitly assumes that usage before and after the seasonal lifeline change date indirectly varies in proportion to the lifeline allowance change. Table IV shows how the McKinney method would bill our hypothetical gas customer with an April 16 to May 15 bill and 66 therms of usage. This is compared in the Table to the PG&E bill. As the Table shows, the McKinney method allocates usage to April and May in a 4.08 to 1 ratio (the same ratio as the lifeline change, 106 ÷ 26 = 4.08), while the PG&E method allocates usage in a 1 to 1 ratio.

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* TURN's argument, and our subsequent discussion here, applies equally to the autumn lifeline change.

Table IV

A Comparison of the PG&E and McKinney Methods

I. Assumptions

1. April 16 - May 15 bill (30 days)
2. 66 therms of usage
3. Lifeline Rate: 4¢/therm, 2nd Tier Rate: 6¢/therm
4. April monthly lifeline allowance: 106 therms
5. May monthly lifeline allowance: 26 therms
6. April 15-30 Lifeline Allowance (both methods): 53 therms
7. May 1-15 Lifeline Allowance (both methods): 13 therms

II. McKinney Method

1. Add April and May lifeline amounts: 53 + 13 = 66
2. Total Bill: 66 x .04 (Lifeline usage)
   0 x .06 (2nd tier usage)
   $2.64 (Total)
3. Implicit Usage Allocation: 53 therms in April, 13 therms in May (4.08 to 1 usage ratio)

III. PG&E Method

1. Allocate usage explicitly to April and May.
2. Assume constant usage, so allocate one-half (33 therms) to April and one-half (33 therms) to May (1 to 1 usage ratio)
3. Total Bill: 33 x .04 (April lifeline usage)
   13 x .04 (May lifeline usage)
   20 x .06 (May 2nd tier usage)
   $3.04 (Total)

IV. Correct Bill with Mid-Month Meter Reading Between April 30 and May 1 Which Documents that April Usage Exceeds May Usage by 25%

1. Total Usage = 66 therms
2. April 15-30 usage = 36.7 therms
3. May 1-15 usage = 29.3 therms
4. Ratio of April to May usage = 1.25
5. Total Bill: 36.7 x .04 (April lifeline usage)
   13 x .04 (May lifeline usage)
   16.3 x .06 (April 2nd tier usage)
   $2.97 (Total)

Difference Between McKinney Bill and Correct Bill: -$.33
Difference Between PG&E Bill and Correct Bill: +$.07

McKinney Error: 12%
PG&E Error: 2%

Which assumption is closer to the actual usage that we would find if we could bill each day (or check the meter on the lifeline change day)? Intuitively it would seem that while usage probably declines slightly on average from April to May with declining space heating needs, the actual change would be closer to the PG&E constant usage assumption than it would be to the McKinney assumption. A review of the April-May 1981 P-1 usage data that TURN submitted supports such a conclusion. The McKinney method would thus appear on average to cause a bias in favor of the prorationed customer that is larger than any bias against such a customer that might arise under the PG&E method. Clearly, because of the technological and administrative constraints cited earlier, we must choose here between imperfect billing alternatives. Among these imperfect alternatives, the PG&E method is preferable because it makes a more realistic usage assumption and this will therefore cause the least amount of inequity between customers that are prorationed and those that are not.*

A related issue here is whether or not the utility can gain financially from any billing biases that result from prorationing. Because of ERAM, the utility cannot gain excess revenues out of the bill prorationing technique. If there is any bias against a prorationed customer, it will cause a revenue shift away from other customers, not an absolute increase in revenues that will increase stockholder profits.

Finally we must consider whether we might avoid bill prorationing related to the seasonal lifeline allowance altogether by making the seasonal change in the allowance on the individual customer's billing date closest to November 1 and May 1, rather than on those exact dates. This is Mr. Macri's suggestion. We agree with PG&E that while this suggested change might eliminate any inequities arising from prorationing it creates other inequities that are greater. First,

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* Over time the inequity will be reduced further as customers who are prorationed in one year have billing cycles that fall closer to the lifeline date in other years.

different customers would have different lifeline allowances at the same time of the year. Secondly, and more importantly, different customers would receive different annual lifeline allowances. A customer would start his or her winter lifeline allowance on an autumn billing date and would receive the allowance for the next six billing periods. As non-prorationed billing periods in the PG&E system can vary from 27 to 33 days, the total number of winter lifeline allowance days during the six-billing periods could vary from 162 to 198.

We will adopt the PG&E method.

Findings of Fact

1. In D.93887 we adopted the EPD method of allocating base revenues.

2. The EPMC allocation method results in an unduly large rate decrease to nonresidential customers as compared to residential customers.

3. The CMC-CMR allocation method is unduly sensitive to residential rate design.

4. The CMC-CMR method shifts a substantial amount of the support for the lifeline rate to other customer classes.

5. The CMC-CMR method results in a residential class average rate which deviates significantly from the system average rate.

6. Neither the EPMC nor the CMC-CMR methods results in an improvement over the existing EPD method.

7. The EPD method is based on marginal costs which include marginal energy costs.

8. Application of the allocation method to total revenues results in a closer cost-to-revenue relationship.

9. The EPD allocation method only works with rate increases.

10. The current revenue charges result in a new decrease.

11. It is reasonable to spread the ECAC rate decrease on an equal ¢/kWh basis.

12. The application of the equal ¢/kWh method in intervening proceedings before PG&E's next general rate proceeding will simplify rate design issues.

13. The three-tier residential rate structure contributes significantly to conservation.

14. All-electric customers are better off with a three-tier rather than a two-tier residential rate structure.

15. Hardships resulting from the three-tier structure can be mitigated without elimination of the third tier.

16. A reduction of the amount of the inversion between tiers mitigates the problems associated with the third tier.

17. A change from 35% differential to a 30% differential is not an abrupt change and results in a rate structure consistent with the Sher Baseline Bill.

18. The size of the second tier has changed twice in the last year and will likely change again next year.

19. Numerous changes in tier size is not desirable.

20. Energy charges provide better conservation signals than customer charges.

21. There is extensive public misunderstanding of the customer charge.

22. The customer charge does little to help bill stability.

23. Customer charges are inappropriate to a marginal cost system of ratemaking.

24. Residential TOU rates suppress peak demand and encourage conservation.

25. Residential TOU rate mitigate the harsh effects of a three-tier rate structure on large users.

26. A residential TOU rate structure whereby the off-peak rate is slightly above the lifeline rate and the on-peak rate is twice the off-peak rate with a $3 customer charge is reasonable.

27. It is reasonable and equitable to make the TOU schedule available primarily to residential customers with usage over 12,000 kWh per year to the extent funding allows.

28. If the A-21 industrial TOU rate were made available to small usage customers, then a large number of customers could have lower bills without any usage pattern changes.

29. It is desirable that the gas and electric discounts to master meter customers be on a consistent basis.

30. It is reasonable that the discount be made as a percentage of lifeline sales.

31. The methods of averaging the costs of overhead service and underground service as proposed by PG&E is reasonable.

32. The following discounts are reasonable:

1. 32% for DT service.
2. 30% for GT service.
3. 9% for DS service.
4. 16% for GS service.

33. PG&E overcollected $6.3 million from the agriculture customer class.

34. The $6.3 million should be refunded as provided in this order.

35. It is reasonable that the agricultural TOU rates have levelized base rates with time varying ECAC factors and that the on/off-peak ratios be restored at historical levels.

36. The current PG&E method of prorationing bills during lifeline seasonal changes is fairer to all customers than the McKinney method.

37. The Macri method eliminates the need to proration the seasonal lifeline allowance change but creates other, greater inequities.

38. PG&E's revenue requirement remains unchanged under any prorationing method.

39. The annual ECAC revenue requirement from A.82-09-51 is $1,478,733,000.

40. The annual ERAM revenue requirement from A.82-09-51 is $81,457,100.

41. The AER revenue requirement from A.82-06-08 is $88,074,000.

42. The attrition allowance from A.60153 (attrition phase) is $156,502,000.

Conclusions of Law

1. All motions not ruled on here or previously ruled on should be denied.

2. PG&E should be authorized to establish the revised rates and charges set forth in the following order which are just and reasonable.

3. The rates and charges authorized here should be effective January 1, 1983.

4. The effective date of this order should be today in order to enable PG&E to file rates which can become effective January 1, 1983.

ORDER ON REHEARING

IT IS ORDERED that:

1. Pacific Gas and Electric Company (PG&E) is authorized to file with this Commission revised tariff schedules for electric and gas rates in accordance with Appendix B to this decision on or after the effective date of this order. The revised tariff schedules shall become effective on the date of the filing but not earlier than January 1, 1983, and shall comply with General Order 96-A. The revised schedules shall apply only to service rendered on or after the effective date.

2. PG&E shall promptly institute recordkeeping and analytical procedures for monthly monitoring of the residential TOU rate program. A semiannual report shall be filed with the Commission covering program marketing, customer information, sales and revenues, load impacts, and meter performance. The first report shall cover the winter season ending on April 30, 1983 and shall be presented in

PG&E's 1983 general rate proceeding. The details of the procedures and report shall be prescribed by the Commission staff and all data from the monthly monitoring efforts shall be readily available to the staff. Within 30 days after the effective date of this order PG&E shall file a report on program expenditures for 1982 and projected for 1983 under the authority of D.93887 and approved here.

3. All motions not previously ruled on are denied.

This order is effective today.

Dated DEC 22 1982, at San Francisco, California.

JOHN E. BRYSON
President
RICHARD D. GRAVELLE
LEONARD M. GRIMES, JR.
VICTOR CALVO
PRISCILLA C. GREW
Commissioners

I will file a written concurrence.
/s/ JOHN E. BRYSON
Commissioner

I dissent in part.
/s/ RICHARD D. GRAVELLE
Commissioner

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

Joseph E. Bodovitz, Executive Director

APPENDIX A

List of Appearances

Applicant: Daniel E. Gibson, William H. Edwards, Stephen F. Greenwald, Shirley A. Woo, and Gail Ann Greely, Attorneys at Law, for Pacific Gas and Electric Company.

Protestants: Robert Gnaizda, Attorney at Law, for Public Advocates, Incorporated, American G.I. Forum, Glide Memorial Methodist Church, OCCUR, LULAC, C.A.A., Officers for Justice, and Sacramento Urban League.

Interested Parties: Bryan Gross, for Resource Management International; Steven Cohn, Attorney at Law, for California Energy Commission; John R. Vickland, Attorney at Law, for San Francisco Bay Area Rapid Transit District; Brobeck, Phleger & Harrison, by William H. Booth, Gordon E. Davis, and Richard Harper, Attorneys at Law, for California Manufacturers Association; John R. Bury, H. Robert Barnes, and Richard K. Durant, Attorneys at Law, for Southern California Edison Company; George P. Agnost, City Attorney, by Leonard L. Snaider, Deputy City Attorney, for the City and County of San Francisco; Michel Peter Florio and Robert Spertus, Attorneys at Law, for Toward Utility Rate Normalization (TURN); Glen J. Sullivan and Allen R. Crown, Attorneys at Law, for California Farm Bureau Federation; Anderson, Hibey, Nauheim & Blair, by Virginia S. Carson, for Contra Costa County; Richard L. Hamilton, Attorney at Law, for Western Mobilehome Association; Halina Osinski, Attorney at Law, for California Community and Junior College Association; Mary Reiter and Nick Tibbetts, for Assemblyman Douglas Bosco; Greue, Clifford, Diepenbrock & Paras, by Thomas S. Knox, Attorney at Law, for California Retailers Association; Downey, Brand, Seymour & Rohwer, by Philip A. Stohr, Attorney at Law, for General Motors Corporation; Joseph E. LaBuda, for Solano County Supporters of the California Tea Party; Leonard Wehrman, for Mobilehome Owners; Bob Cavender, for California Tea Party; Stephen P. Crouch, for the Los Angeles Department of Water and Power; C. Michael Finen, Attorney at Law, for Residents for Affording Power (RAP); Kevin J. Armstrong, for Utility Rate Justice; Harry Winters, for University of California; and Philip Davies, for himself.

Commission Staff: Timothy E. Treacy, Attorney at Law.

(END OF APPENDIX A)

APPENDIX B
Page 2

Pacific Gas and Electric Company

RATES - ELECTRIC DEPARTMENT

Schedule No. A-1	Per Meter Per Month
Customer Charge	$ 1.75
Base Energy Charge all kWh, per kWh	0.04564
ECABF all kWh, per kWh	0.02937

Schedule No. A-12	Per Meter Per Month
Demand Charge:	
First 40 kW or less of maximum demand	$ 91.00
Next 260 kW of maximum demand, per kW	1.99
Over 300 kW of maximum demand, per kW	1.82
Base Energy Charge all kWh, per kWh	0.03440
ECABF all kWh, per kWh	0.02937

Schedule No. A-15	Per Meter Per Month
Customer Charge	$ 1.75
Base Energy Charge all kWh, per kWh	0.08572
ECABF all kWh, per kWh	0.02937

Schedule No. A-18A	Per Meter Per Month
Demand Charge:	
On-Peak, per kW of Maximum Demand, but not less than $7,000 per month	$ 1.40
Off-Peak, per kW of Maximum Demand in excess of the On-Peak Demand	.35
Base Energy Charge all kWh, per kWh	0.01567
ECABF all kWh, per kWh	0.02937

CORRECTION

THIS DOCUMENT

HAS BEEN REPHOTOGRAPHED

TO ASSURE LEGIBILITY

APPENDIX A

List of Appearances

Applicant: Daniel E. Gibson, William H. Edwards, Stephen F. Greenwald, Shirley A. Woo, and Gail Ann Greely, Attorneys at Law, for Pacific Gas and Electric Company.

Protestants: Robert Gnaizda, Attorney at Law, for Public Advocates, Incorporated, American G.I. Forum, Glide Memorial Methodist Church, OCCUR, LULAC, C.A.A., Officers for Justice, and Sacramento Urban League.

Interested Parties: Bryan Gross, for Resource Management International; Steven Cohn, Attorney at Law, for California Energy Commission; John R. Vickland, Attorney at Law, for San Francisco Bay Area Rapid Transit District; Brobeck, Phleger & Harrison, by William H. Booth, Gordon E. Davis, and Richard Harper, Attorneys at Law, for California Manufacturers Association; John R. Bury, E. Robert Barnes, and Richard K. Durant, Attorneys at Law, for Southern California Edison Company; George P. Agnost, City Attorney, by Leonard L. Snaider, Deputy City Attorney, for the City and County of San Francisco; Michel Peter Florio and Robert Spertus, Attorneys at Law, for Toward Utility Rate Normalization (TURN); Glen J. Sullivan and Allen R. Crown, Attorneys at Law, for California Farm Bureau Federation; Anderson, Hibey, Nauheim & Blair, by Virginia S. Carson, for Contra Costa County; Richard L. Hamilton, Attorney at Law, for Western Mobilehome Association; Halina Osinski, Attorney at Law, for California Community and Junior College Association; Mary Reiter and Nick Tibbetts, for Assemblyman Douglas Bosco; Greue, Clifford, Diepenbrock & Paras, by Thomas S. Knox, Attorney at Law, for California Retailers Association; Downey, Brand, Seymour & Rohwer, by Philip A. Stohr, Attorney at Law, for General Motors Corporation; Joseph E. LaBuda, for Solano County Supporters of the California Tea Party; Leonard Wehrman, for Mobilehome Owners; Bob Cavender, for California Tea Party; Stephen P. Crouch, for the Los Angeles Department of Water and Power; C. Michael Finen, Attorney at Law, for Residents for Affording Power (RAP); Kevin J. Armstrong, for Utility Rate Justice; Harry Winters, for University of California; and Philip Davies, for himself.

Commission Staff: Timothy E. Treacy, Attorney at Law.

(END OF APPENDIX A)

APPENDIX B
Page 1

Pacific Gas and Electric Company

RATES - ELECTRIC DEPARTMENT

Applicant's electric base rates[1/] and Energy Cost Adjustment Billing Factors are changed to the extent set forth in this appendix.

Schedule No. D-1	Per Meter Per Month
Base Energy Charge all kWh, per kWh	$ 0.04265
ECABF	
Tier I Lifeline Allowance, per kWh	0.01162
Tier II kWh equal to two-thirds Lifeline Allowance, or 300 kWh whichever is greater, per kWh	0.02791
Tier III all excess, per kWh	0.04908

Schedule No. D-7	Per Meter Per Month
Customer Charge	$ 3.00
Base Energy Charge all kWh, per kWh	0.04265
ECABF:	
On-Peak kWh, per kWh	0.06045
Off-Peak kWh, per kWh	0.01171

Schedule No. DS

The effective rates of the single family domestic service schedule, applicable in the territory in which the multi-family accommodation is located, less 9% of the rate for the Lifeline Allowance.

Schedule No. DT

The effective rates of the single family domestic service schedule, applicable in the territory in which the multi-family accommodation is located, less 32% of the rate for the Lifeline Allowance.

1/ Base rates include ERAM, ARA, AER, CFA, SFA, and RCS.

APPENDIX B
Page 2

Pacific Gas and Electric Company

RATES - ELECTRIC DEPARTMENT

Schedule No. A-1	Per Meter Per Month
Customer Charge	$ 1.75
Base Energy Charge all kWh, per kWh	0.04564
ECABF all kWh, per kWh	0.02937

Schedule No. A-12	Per Meter Per Month
Demand Charge:	
First 40 kW or less of maximum demand	$ 91.00
Next 260 kW of maximum demand, per kW	1.99
Over 300 kW of maximum demand, per kW	1.82
Base Energy Charge all kWh, per kWh	0.03440
ECABF all kWh, per kWh	0.02937

Schedule No. A-15	Per Meter Per Month
Customer Charge	$ 1.75
Base Energy Charge all kWh, per kWh	0.08572
ECABF all kWh, per kWh	0.02937

Schedule No. A-18A	Per Meter Per Month
Demand Charge:	
On-Peak, per kW of Maximum Demand, but not less than $7,000 per month	$ 1.40
Off-Peak, per kW of Maximum Demand in excess of the On-Peak Demand	.35
Base Energy Charge all kWh, per kWh	0.01567
ECABF all kWh, per kWh	0.02937

APPENDIX B
Page 3

Pacific Gas and Electric Company
RATES - ELECTRIC DEPARTMENT

Schedule No. A-18B

	Per Meter Per Month Period A	Period B
Customer Charge:	$715.00	$715.00
Base Energy Charge all kilowatt hours, per kWh	0.01640	0.01640

ECABF:

	$ Per kWh On Peak	Partial Peak	Off Peak
Period A	0.03208	0.03029	0.02849
Period B	0.03208	0.03029	0.02849

Schedule No. A-20A

	Per Meter Per Month
Demand Charge:	
First 40 kW of billing demand or less	$ 91.00
Next 260 kW of billing demand, per kW	1.99
Over 300 kW of billing demand, per kW	1.82
Base Energy Charge all kWh, per kWh	0.01545
ECABF all kWh, per kWh	0.02937

Schedule No. A-20B

	Per Meter Per Month
Service Charge:	$ 17.50
Energy Charge:	
On-Peak, per kilowatt hour	0.09992
Plus: Partial-Peak, per kilowatt hour	0.06745
Plus: Off-Peak, per kilowatt hour	0.01349

Energy Cost Adjustment:
No additional energy charge will be collected. The listed rates contain an imputed Energy Cost Adjustment of 0.02937.

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Page 4

Pacific Gas and Electric Company
RATES - ELECTRIC DEPARTMENT

Schedule No. A-20C

	Per Meter Per Month
Service Charge:	$17.50
Energy Charge:	
On-Peak, per kilowatt hour	0.12136
Plus: Partial-Peak, per kilowatt hour	0.04551
Plus: Off-Peak, per per kilowatt hour	0.03034

Energy Cost Adjustment:
No additional energy charge will be collected. The listed rates contain an imputed Energy Cost Adjustment of 0.02937.

Schedule No. A-20D

	Per Meter Per Month
Service Charge:	$17.50
Energy Charge: (In Addition to the Service Charge)	
On-Peak, per kilowatt hour	0.07100
Plus: Partial Peak, per kilowatt hour	0.05979
Plus: Off-Peak, per kilowatt hour	0.3737

Energy Cost Adjustment:
No additional energy charge will be collected. The listed rates contain an imputed Energy Cost Adjustment of 0.02937.

Schedule No. A-21

	Per Meter Per Month	
	Period A	Period
Customer Charge:	$65.00	$65.00
Demand Charge:		
Per kilowatt of Maximum Demand	$1.00	$1.00
Base Energy Charge all kWh, per kWh	0.03589	0.03

ECABF:

	$ Per kWh		
	On Peak	Partial Peak	Off Peak
Period A	0.06138	0.02615	0.01624
Period B	0.04745	0.02887	0.02407

Pacific Gas and Electric Company
RATES - ELECTRIC DEPARTMENT

Schedule Nos. A-22 and A-23

	Per Meter Per Month	
	Period A	Period B
Customer Charge:	$550.00	$550.00
Demand Charge:		
On Peak, per kilowatt of Maximum Demand	2.50	0.75
Plus Partial Peak, per kilowatt of Maximum Demand	0.30	0.25
Plus Off Peak, per kilowatt of Maximum Demand	No Charge	No Charge
Base Energy Charge, all kWh, per kWh	0.03276	0.03276

ECABF:

	$ Per kWh		
	On Peak	Partial Peak	Off Peak
Period A	0.04080	0.03554	0.01978
Period B	0.04149	0.03185	0.02392

Schedule No. PA-1

Service charge, per customer per month	$2.50
Per hp or kW, per month	0.60
Base Energy Charge, all kWh, per kWh	0.03315
ECABF, all kWh, per kWh	0.02937

Schedule No. PA-2X

Monthly Service Charge: $2.50 plus $0.80 per kW on On-Peak Maximum Demand

	Per Meter Per Month
Base Energy Charge, all kWh, per kWh	$0.02994

ECABF:

	$ Per kWh		
	On Peak	Partial Peak	Off Peak
Period A	0.05875	0.02937	0.02349
Period B	0.04860	0.02937	0.02349

Pacific Gas and Electric Company
RATES - ELECTRIC DEPARTMENT

	Per Meter Per Month	
	Period A	Period B
Schedule No. PA-R		
Service Charge:	$2.50	
Base Energy Charge All kWh	$0.03552	$0.03552
ECABF:		
Restricted On-Peak, per kWh	0.12106	0.10305
On-Peak, per kWh	0.05317	0.04302
Off-Peak, per kWh	0.01791	0.01791
Schedule No. TC-1		
Service Charge:		
For each service connection	$1.75	
Base Energy Charge all kWh, per kWh	0.04564	
ECABF all kWh, per kWh	0.02937	
Railway		
Demand Charge:		
Per kW of billing demand	$2.15	
Base Energy Charge all kWh, per kWh	0.02609	
ECABF all kWh, per kWh	0.02937	
AMES & SLAC		
Base Energy Charge all kWh, per kWh	$0.01285	
ECABF all kWh, per kWh	0.02937	

APPENDIX B
Page 7

Pacific Gas and Electric Co.
RATES-ELECTRIC DEPARTMENT

Schedule No. LS-1 1/

Class	$ All Night Rates Per Lamp Per Month A	B	C	D	E	F	Half-Hour Adjustment $
Nominal Lamp Rating Incandescent Lamps							
Lamp Watts / Lumens							
58 / 600	5.481						.081
92 / 1,000	6.303						.126
189 / 2,500	10.084	8.403					.259
295 / 4,000	12.901	11.218					.404
405 / 6,000	15.872	14.186					.555
620 / 10,000	22.187	20.550					.848
Mercury Vapor Lamps							
Lamp Watts / Lumens							
100 / 3,500	9.163	7.947	6.451	14.857	14.066	11.364	.144
175 / 7,500	10.828	9.655	8.555	16.155	15.795	13.078	.230
250 / 11,000	13.132	11.918	10.832	20.083	18.203	16.375	.330
400 / 21,000	18.021	16.526	15.158		23.419	20.883	.524
700 / 37,000	29.001	25.827	26.051		34.002	33.375	.891
1,000 / 57,000	37.423	34.062	34.485		42.942	41.723	1.265
High Pressure Sodium Vapor Lamps							
Lamp Watts / Average Initial Lumens							
70 / 5,800	10.483	9.246	7.764	15.178	14.766	12.130	.087
100 / 9,500	11.733	10.491	8.398	16.017	15.680	13.373	.123
150 / 16,000	13.046	11.811	9.915	17.246	17.330	14.692	.180
200 / 22,000	15.326	14.089	12.195		19.775	19.032	.272
250 / 25,000	16.930	15.692	13.881		21.460	20.717	.332
400 / 46,000	21.136	19.901	18.010		25.585	24.844	.503

1/ The rates shown are effective rates including an ECABF of $0.02937.

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Page 8

Pacific Gas and Electric Company
Rates - Electric Department

Schedule No. LS-2 1/

Line	LS-2	LS-2A	LS-2B	LS-2C	AB and Half-Ec Adjustm
1	All Night	$	$	$	$
2	Incandescent 600 Lumens				
3	1,000 Lumens	2.768	3.921	5.009	.12
4	2,500 Lumens	5.691	7.091	8.178	.25
5	4,000 Lumens	8.894	10.377	11.465	.40
6	6,000 Lumens	12.220	13.702	14.789	.55
7	10,000 Lumens	18.662	20.344	21.432	.84
8	15,000 Lumens	25.896	27.774		1.17
9	Total				
10					
11	Mercury Vapor				
12	100 Watt 3,500 Lumens	3.165	3.954	5.043	.14
13	175 Watt 7,500 Lumens	5.058	5.848	6.935	.23
14	250 Watt 11,000 Lumens	7.252	8.257	9.345	.33
15	400 Watt 21,000 Lumens	11.531	12.538	13.624	.52
16	700 Watt 37,000 Lumens	19.603	21.496	22.567	.89
17	1,000 Watt 57,000 Lumens	27.824	29.817	30.906	1.26
18	Total				
19					
20	High Pressure Sodium Vapor				
21	120 Volts				
22	70 Watt 5,800 Lumens	1.915	2.887	3.974	.087
23	100 Watt 9,500 Lumens	2.713	3.685	4.774	.123
24	150 Watt 16,000 Lumens	3.968	4.940	6.027	.180
25					
26	240 Volts				
27	70 Watt 5,800 Lumens	2.250	3.221	4.311	.102
28	100 Watt 9,500 Lumens	3.273	4.245	5.333	.149
29	150 Watt 16,000 Lumens	4.662	5.634	6.720	.212
30	200 Watt 22,000 Lumens	5.983	7.005	8.093	.272
31	250 Watt 25,500 Lumens	7.305	8.326	9.413	.332
32	310 Watt 37,000 Lumens	8.959	-	-	.407
33	400 Watt 46,000 Lumens	11.072	12.095	13.182	.503
34					

Pacific Gas and Electric Company
Rates - Electric Department

Schedule No. LS-2 (Continued)

Line		LS-2A	LS-2B	LS-2C	AB and C Half-Hour Adjustment
		$	$	$	$
35	Low Pressure Sodium Vapor				
36	35 Watt 4,800 Lumens	1.550			.070
37	55 Watt 8,000 Lumens	2.051			.093
38	90 Watt 13,500 Lumens	3.370			.153
39	135 Watt 21,500 Lumens	4.662			.212
40	180 Watt 33,000 Lumens	5.787			.263
41	Total				
42					
43	Metal Halide				
44	400 Watt 30,000 Lumens	10.643			.484
45	1,000 Watt 9,000 Lumens	25.386			1.154

1/ The rates shown are effective rates including an ECABF of $0.02937.

Pacific Gas and Electric Company
RATE - ELECTRIC DEPARTMENT

Schedule No. LS-3

	Per Meter Per Month
Service Charge	$3.00
Base Energy Charge, all kWh per kWh	0.04348
ECABF, all kWh per kWh	0.02937

Schedule No. OL-1 1/

	Per Lamp Per Month
Mercury Vapor Lamps:	
175 watts	$12.282
400 watts	19.344
High Pressure Sodium Vapor Lamps:	
70 watts	$10.592
100 watts	11.830
200 watts	15.401

1/ The rates shown are effective rates including an ECABF of $0.02937.

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Pacific Gas and Electric Co.
RATES-GAS DEPARTMENT

Schedule No. GS

The effective rates of the single family domestic service schedule, applicable in the territory in which the multi-family accommodation is located, less 16% of the rate for the Lifeline Allowance.

Schedule No. GT

The effective rates of the single family domestic service schedule, applicable in the territory in which the multi-family accommodation is located, less 30% of the rate for the Lifeline Allowance.

(END OF APPENDIX B)

D.82-12-113
A.60153
A.60616

COMMISSIONER JOHN E. BRYSON, Concurring:

In this concurring opinion, I want to develop in greater detail the rationale for the use of the Equal Percentage of the Difference (EPD) allocation method, and for the adoption of a three-tier rate design for residential customers.

This decision rejects the Equal Percentage of Marginal Cost (EPMC) approach because it would result in a dramatic revenue shift to residential ratepayers. However, while the EPMC approach is not adopted directly, the adoption of the EPD method does move rates towards EPMC.

I favor this direction towards EPMC. While immediate adoption of the EPMC results in too sharp a shift in revenue allocation, in principle it has merit. Under an EPMC method, rates are initially calculated at full marginal cost. Insofar as the rates derived from the revenue requirement are different from marginal cost, the difference is allocated on an equal percentage basis among classes. Individual rates can then be designed as much as possible on marginal cost principles, within the constraints of the total revenue allocation. This approach presents an equitable assignment of costs among the various classes based on the foundation of marginal cost principles. Insofar as rates for classes deviate from marginal costs, they all deviate evenly.

While movement towards EPMC is implicit in an EPD method, the current version has mechanical features which make

it imperfect. First, it does not work when applied to decreases. Second, it is only applied to base rates, not energy rates. Energy rates are allocated equally among classes in cents per kWh. The decision, while recognizing these weaknesses, adopts the current EPD method for now, and asks the parties to present alternatives in the future that correct these defects. This is reasonable. Whatever revision is adopted, it should allow the Commission to shift gradually towards EPMC, without abrupt adjustments.

The decision retains a three-tier rate structure for PG&E. In reaching a decision on two versus three tiers, consideration should be given to the relationship between system average and marginal costs. When the difference between average and marginal cost is narrow, a two-tier structure may be desirable. When the two are relatively distant, as in the case of PG&E, a three-tier structure has merit.

The Commission has adopted a policy of designing rates based on a utility's marginal cost of producing electricity. Marginal cost pricing encourages customers to make an economic choice between additional purchases of electricity and conservation. However, a practical problem is that prices based on marginal costs do not necessarily result in revenues that match the revenue requirement. Currently, the average cost of electricity is below the marginal rate, and pricing at the margin would result in an overcollection for the utility.

An excellent feature of an inverted rate design is that it can accomodate marginal cost pricing while not over-collecting revenue requirements. By setting the highest tier at or close to the marginal rate, customers are given an efficient price signal to choose between conservation and additional usage. Utilities do not overcollect revenue because of the lower rates for the lower tiers. A reasonable rate policy is to adopt inverted rates with the highest tier near, but not above, the marginal cost. This encourages those with discretionary usage to conserve, while not overburdening those customers such as large families, with unavoidable usage at the higher rate levels.

With this in mind, the choice between two and three tiers partly depends on the relationship between average and marginal costs. In the case where average cost is significantly less than marginal cost, a three-tiered rate structure may be desirable because the third tier can be fixed near marginal cost to give an economic signal relating to discretionary use. There is evidence developed in this record that usage in the third tier is more elastic than in lower tiers, and that therefore there will be a greater conservation effect with a three-tier structure. On the other hand, in the event average and marginal costs are close, a three-tiered structure may not be desirable because the design may require that the third tier rate actually be above a utility's marginal costs, which would overburden customers in the third tier beyond the economic cost

of additional usage. Especially for large families, it is not desirable to charge customers more than the marginal costs of producing electricity. Under such circumstances, a two-tiered design may have merit, with the second tier near the utility's marginal costs.

In the case before us, the adoption of three tiers is reasonable, because the average residential rate of 6.5¢ is significantly below the class marginal rate of 10.3¢. As a result, the third tier rate adopted is near marginal cost. In the case of Southern California Edison the two-tier structure, adopted in Decision 82-12-055 last week, is sensible because the average cost of 7.4¢/kWh is closer to the marginal cost of 8.7¢/kWh. A three-tier rate design would probably have resulted in rates in the third tier above marginal cost.

With this criterion, the choice between two and three tiers in the future will depend on future costs. Should the average-marginal cost gap narrow in the future, a switch to two tiers may be appropriate. For now, however, the three-tier structure appears to be preferable for PG&E.

Date: December 22, 1982
San Francisco, Calif.

JOHN E. BRYSON

H-3

A.60153, A.60616
D.82-12-113

RICHARD D. GRAVELLE, Commissioner, Dissenting in part:

There are two aspects of this decision with which I disagree.

First, we here maintain a three tier rate structure, an action with which I do not quarrel, but only a week ago we imposed a two tier rate structure on the customers of Southern California Edison Company, the other large regulated electric utility in California. I believe our rate design policy should be clearly stated and consistently applied. If there are valid reasons why one utility should have three rather than two tiers in its rate structure we should explain them. We have not done so in either this decision or the one relating to Edison.

Second, I believe that the allocation method proposed by ALJ Kenneth Henderson in this proceeding which would have set the lifeline rate at 80% of the system average rate and spread the remaining revenue requirement among all customer classes, including non-lifeline residential, on a direct equal percent of the marginal cost, is a far better method than that endorsed by the majority today. The ALJ's proposal recognized the theoretical validity of TURN's class marginal rate proposal and thereby promoted greater economic efficiency. Furthermore, it was strongly supported in this record. Also, the ALJ's method recognized that all customers should bear some portion of the lifeline undercollection as a matter of equity. I believe this was the intent of the state legislature in adopting the Sher bill wherein the placement of this undercollection was carefully considered. The legislative silence on this issue in the same session that it limited our discretion as to the steel industry is a clear indication to me that not only did they leave the issue to our discretion but that they also felt equity would be served by an across the board sharing of this small subsidy for the harried residential customer.

Richard D. Gravelle

Richard D. Gravelle, Commissioner

December 22, 1982
San Francisco, California

could arise in each proceeding regarding the numerous allocation issues. We prefer that the rate design portions of offset proceedings be noncontroversial. The methodology to be applied to revenue changes which take place before the next general rate case will be on an equal ¢/kWh basis.

We direct the staff and PG&E to develop a modification of the EPD method that will apply to the total effective rate and will also work for rate decreases. We also welcome proposals from other interested parties. We expect this methodology to be developed in PG&E's new general rate case (NOI 78).

Allocation Tables

The following tables are designed to illustrate our adopted allocation methodology as compared to the other two proposals. The first table (Table 2) shows sales, short-run marginal costs (D.93887), and present effective revenues at August 23, 1982 rates. The following three columns show the result under each method. Table 3 compares the results of each of the methods to present rates. The comparison is made by computing the class average rate and its percentage change from present rates.

The total revenue requirement is developed as follows:

1. ECAC = $ 476,049,000 - 4 months
   $1,478,762,000 - Annualized
   (A.82-09-51);
2. ERAM = $26,223,000 - 4 months
   $81,457,100 - Annualized
   (A.82-09-51);
3. AER = $88,074,000
   (A.82-06-08);
4. Attrition = $156,502,000
   (A.60153, Attrition Phase); and
5. Current base revenues.

Table 2

Allocation Comparison Table

Customer Class	Sales gWh	SRMC ¢/kWh	Present Effective Revenues	CRA EPMC	TURN CMR-CMC	Adopted EPD ¢/kWh
Residential	18,575	10.265	1,264,401	1,275,456	1,114,560	1,204,525
Light & Power						
Small	4,632	10.324	378,567	319,886	341,130	360,558
Medium	12,904	10.233	948,022	883,294	941,955	910,004
Large	14,700	9.924	1,003,532	975,884	1,040,697	963,897
Agriculture	3,328	10.178	254,217	226,581	241,629	242,914
Railway	259	9.823	16,846	17,019	18,149	16,222
Subtotal	54,398	-	3,865,585	3,698,120	3,698,120	3,698,120
Pub. Authority	385	-	24,140	-	-	22,517
DWR	-	-	-	-	-	-
Streetlighting	363	-	52,324	-	-	53,820
Interdept.	131	-	9,464	-	-	9,040
CPUC Juris. Sales Rev.	55,277	-	3,951,513	-	-	3,783,497
Other Rev	-	-	15,302	-	-	15,302
Total CPUC Juris. Rev.	-	-	3,966,815	-	-	3,798,799

Table 3

Results of Allocation Comparison

Customer Class	EPMC % Change	EPMC Avg. Rate	CMR-CMC % Change	CMR-CMC Avg. Rate	Adopted % Change	Adopted Avg. Rate
Residential	0.87	6.86	(11.85)	6.00	(4.74)	6.48
Light & Power						
Small	(15.50)	6.91	(9.89)	7.36	(4.76)	7.78
Medium	(6.83)	6.85	(0.64)	7.30	(4.01)	7.05
Large	(2.76)	6.64	3.70	7.08	(3.95)	6.56
Agriculture	(10.87)	6.81	(4.95)	7.26	(4.45)	7.30
Railway	1.03	6.57	7.73	7.01	(3.70)	6.26
Subtotal	(4.33)	6.80	(4.33)	6.80	(4.33)	6.80
Pub. Authority	(6.72)	5.85	-	-	6.72	5.85
DWR	-	-	-	-	-	-
Streetlighting	-	-	-	-	2.86	14.83
Interdept.	-	-	-	-	(4.48)	6.90
Total Juris.	(4.25)	6.85	(4.25)	6.85	(4.25)	6.85

(Red Figure)

Rate Design

During this proceeding, rate design issues were raised concerning residential, industrial, and agricultural customer classes. For the residential class, the major issues were (1) the number and size of tiers in the inverted block structure; (2) the reinstatement of the customer charge; and (3) implementation of residential time-of-use (TOU) rates. Within the industrial classes, the sole issue was to what extent the A-21 (TOU) schedule should be made available. In the agricultural class, the two issues were (1) prior overcollections and (2) the relationship between the PA-1 and PA-2X schedules. The remaining rate design issues concerned the form and the amount of the master meter discount for both gas and electric customers.

of view of various conservation measures. Rate design is also an important incentive is the residential TOU program that we discuss later in this decision. Not only does rate design have important consequences for other programs, but the reverse is also true. Various other rate-related programs can have a mitigating influence on particular aspects of rate design. Such other programs could include (1) residential TOU rates, (2) interruptible residential service, (3) demand subscription service, and (4) balance payment plan.

In its brief (page 25) the staff seeks firm policy guidelines by posing the following questions:

> "Is conservation a greater goal than rate stabilization?
>
> "Are we striving for customer rate options or customer understanding of rate design, and are these goals mutually exclusive?"

While our rate structures do vary by utility, within each utility we have tried to achieve some consistency and continuity. With the changing nature of utility costs and the changing relationship between marginal and average cost, some change over time is inevitable if we are to strive for economic efficiency. Conservation remains the foundation of our rate structure. This premise is reinforced by the Sher Baseline Bill. On the other hand, other goals like rate stability and equity are also important. Concerning rate stability versus conservation, one could question our retention of a three-tier rate structure and authorization of the balanced payment plan. We do not think that these two actions are mutually exclusive. We recognize that at very high usage levels, a three-tier structure can cause bills to vary significantly; its

marginal rate. With the rate structure and usage in each tier displayed on the customer's bill every month, the customer has information on his marginal rate, which we can only hope is used in making decisions on usage and on conservation. It is difficult to find ways to further promote such understanding, and we would welcome recommendations in the next PG&E general rate case.

The last question posed by the staff is whether we favor conservation more than rate stability? ~~This question seems similar to having a child ask a parent which child the parent likes best? True economic regulation must have~~ Conservation to the extent compatible with economic efficiency ~~as its pricing goal. This~~ remains the foundation of our rate design but we favor programs to mitigate any undue hardship caused by rate instability. The primary benefit of a three-tier structure is its conservation effect.

The testimony of Dr. Wells, Dr. Acton, and PG&E witness Howard corroborate the view that a three-tier rate structure directly causes greater conservation than a two-tier structure. The testimony of Dr. Acton sponsored by Contra Costa County showed that in a large scale southern California experiment, price elasticity increased with higher usage levels.

Dr. Wells has shown that the class marginal rates should be used in predicting demand. Dr. Wells' testimony also shows that a three-tier rate structure will generally produce a higher class marginal rate than a two-tier structure at a constant revenue requirement.

Howard, in conducting studies at our direction the last few years, has used a method of calculating the conservation effects of rate structure without the very controversial use of elasticity data. Howard has shown that a two-tier structure has more of a conservation effect than a declining rate structure. He also

testified that a three-tier would have more of a conservation effect than a two-tier structure. In A.82-06-08 Howard further developed the studies that he provided in A.60153. The further studies showed, and we found, that the three-tier conservation effect was about twice that of a two-tier structure.

Thus, while the criticism that a three-tier structure does not produce a conservation effect is clearly refuted, some of the other criticism appears more valid. The problems of widely fluctuating bills with variable weather conditions and unfairly high bills for large families result from usage being pushed into the third tier. If we eliminate the third tier, the weather problem would be lessened somewhat; but this would necessitate a higher second tier in order to recover sufficient revenues from the residential class. Thus, customers whose use previously ended in the second tier would have higher bills to subsidize those large users who were previously in the third tier. This ~~has a serious equity problem and~~ would also reduce the conservation signal for large users. So, even though bills might be more stable with a change to two tiers, they would not necessarily be lower for many customers.

The problem of large families with large total usage or other nondiscretionary high usage is inherent in a rate structure that does not vary with household size. The participants in our proceeding have so far been unable or unwilling to advance a system of per-capita rates, and we note that such a system would be extremely difficult to administer as household size can change ~~monthly (e.g. students home for vacation)~~.

We believe that the nondiscretionary high usage problem and weather-caused unstable bill problems are best solved by mitigation rather than elimination of the third tier. In making this choice, we realize that there will always be some equity problems with any rate

analytical reason for the size of the second tier to be a function of the size of the first tier under the Miller-Warren Lifeline Act provisions. It appears that implementation of A.B. 2443 (Sher Bill) next year for PG&E will result in reanalysis of the size of the first tier which may also cause some change of the second tier. With all these changes which have either taken place or will probably take place in the future, we believe that the second tier ~~size~~ should remain at its current size at this time.

2. Customer Charge

In D.93887 we eliminated the customer charge for PG&E. The revenue impact of the elimination was spread across lifeline sales. In granting rehearing of D.93887 we included the customer charge as an issue even though no parties raised it because we wanted further consideration by all parties of the propriety of the action. During the hearings in the rehearing of D.93887, staff witness Sipe proposed reinstating the customer charge in order to produce greater bill stability. The Farm Bureau joined in the staff's recommendation. PG&E, TURN, and the CEC all oppose reinstatement of the customer charge.

PG&E provided testimony showing that the customer charge produces an anticonservation effect. Also, PG&E reported extensive customer complaints and misunderstanding regarding the customer charge. PG&E's analysis of the alternative methods of reallocating the customer charge revenue showed that the method chosen in D.93887 was most equitable to the largest number of customers. PG&E's analysis also shows that reinstating the customer charge has little effect on bill stability.

The record in this proceeding also developed the fact that the customer charge basically results from embedded cost ratemaking. In a marginal cost system of ratemaking, the customer charge is out of place.

We will not reinstate the customer charge. Also, we will not change the method of distributing the previous customer charge revenues.

3. Residential TOU Rates

D.93887 authorized residential TOU rates on an experimental basis and directed PG&E to file a plan within 120 days. The Implementation Plan for Schedule D-7, dated April 30, 1982 was presented as Exhibit No. 205. The Contra Costa Board of Supervisors (Contra Costa) participated actively on this issue through introduction of the testimony of Jan Paul Acton on Optional Time of Day Rates for Residential Customers, Exhibits Nos. 207, 208, and 209.

Except for PG&E and Contra Costa, no other party presented technical evidence on this program. The program was commented on extensively in the staff brief. The staff recommended that the program be expanded as rapidly as possible with eligibility priorities based on average monthly usage levels which exceed 1,000 kWh per month. Solidarity for Utility Rate Justice (SURJ) expressed concern in their brief relative to revenue shifts resulting from the rate proposal. No other parties commented on the program or made recommendations in their briefs.

After submission of this proceeding, PG&E and Contra Costa submitted a Stipulation reporting their agreement on a program of TOU rates for residential subscribers. After a comprehensive review of PG&E's proposed advice letter which reflected the basis for the stipulation, the staff recommended that an advice letter be filed.

Upon consideration of Advice Letter 907-E filed August 20, 1982 and protests of SURJ and TURN, the Commission by Resolution E-1950 of October 6, 1982 authorized PG&E to implement Schedule D-7, Experimental Domestic Service Time-of-Use under the following conditions:

Usage Level (kWh)	Inverted Rates Monthly Bills		TOU*
	Summer	Winter	
0 (Cust. Chg.)	-	-	$ 3
720 (L.L.)	$ 40	-	52
1,290 (L.L.)	-	$ 72	91
1,500	107	88	105
2,000	209	173	173

*19.7% @ 11.0¢, 80.3% @ 5.8¢ = 6.8¢ Average Rate.

Monthly bills on the TOU rate are about equal to the bills from inverted rates at usage levels approximately two times the lifeline allowance - 1,500 kWh for the air conditioning summer bill and 2,500 kWh for the winter space heating bill. Therefore, at usage levels above about two times the lifeline allowance the residential user of large quantities of electricity can reduce his monthly bill by initially subscribing to the TOU rate. Rate benefits from the initial shift will result in revenue transfer to other ratepayers. An analogy would be a change in the size of the second tier for extended lifeline customers, which would be a benefit to large users. However, a TOU program is much more beneficial than the extension of a second tier allowance, because there will definitely be cost savings through load reduction and load shifting.

We believe this opportunity should be provided to users of large quantities of electricity throughout PG&E's service area. In D.93387 a year ago we approved annual expenditures covering approximately 10,000 residential TOU meters. The annual revenue transfer from 10,000 meters could be in a range of $2 to $2.5 million compared to projected residential revenues of $1,217 million and total system revenues of $3,821 million. We do not agree with SURJ's

the customer charge. D.82-02-075 granted rehearing of D.93887 regarding the appropriate discount to apartment and mobilehome park owners. The issues raised are (1) the form of the discount and (2) the amount.

The discount can be either a flat amount or a percentage of lifeline sales. The consensus of the WMA, PG&E, and the staff was that whatever the form of the discount, it should be consistent for both gas (GS and GT) and electric customers (DS and DT). We agree; the discount will be applied as a percentage of lifeline sales.

The amount of the discount was contested by WMA and PG&E. The basic flaw in the record in this proceeding is that there were no up-to-date cost studies. The current amounts must be estimated from a study produced in 1977. The WMA recommends a 34% discount for mobilehome electricity (DT) and 30% for mobilehome park gas service (GT). PG&E recommends 32% for DT and 30% for GT service. It also recommends a 9% discount for apartment house electricity (DS) and a 16% discount for apartment house gas (GS). The difference in the recommendations results primarily from different weighting methods in averaging underground and overhead service provided by mobilehome parks. We endorse the more even method used by PG&E. We will therefore find that the resulting discounts, as proposed by PG&E, are reasonable.

Agricultural Rates

An agricultural electric TOU program was approved by PG&E in D.91107 dated December 19, 1979. The target goal was 6,375 participants with a 1980 test year expense level of $4,500,000. Agricultural rates were set at a level to recover $4,500,000 over and above the class allocated revenue requirement.

PG&E failed to acquire and install the TOU meters during the projected time period. Thus, PG&E collected more revenues from the agricultural class than it would have if no program had been authorized.

7. The EPD method is based on marginal costs which include marginal energy costs.

8. Application of the allocation method to total revenues results in a closer cost-to-revenue relationship.

9. The EPD allocation method only works with rate increases.

10. The current revenue charges result in a new decrease.

11. It is reasonable to spread the ECAC rate decrease on an equal ¢/kWh basis.

12. The application of the equal ¢/kWh method in intervening proceedings before PG&E's next general rate proceeding will simplify rate design issues.

13. The three-tier residential rate structure contributes significantly to conservation.

14. All-electric customers are better off with a three-tier rather than a two-tier residential rate structure.

15. Hardships resulting from the three-tier structure can be mitigated without elimination of the third tier.

16. A reduction of the amount of the inversion between tiers mitigates the problems associated with the third tier.

17. A change from 35% differential to a 30% differential is not an abrupt change and results in a rate structure consistent with the Sher Baseline Bill.

18. The size of the second tier has changed twice in the last year and will likely change again next year.

19. Numerous changes in tier size is not desirable.

20. Energy changes provide better conservation signals than customer charges.

21. There is extensive public misunderstanding of the customer charge.

22. The customer charge does little to help bill stability.

23. Customer charges are inappropriate to a marginal cost system of ratemaking.

24. Residential TOU rates suppress peak demand and encourage conservation.

25. Residential TOU rate mitigate the harsh effects of a three-tier rate structure on large users.

26. A residential TOU rate structure whereby the off-peak rate is slightly above the lifeline rate and the on-peak rate is twice the off-peak rate with a $3 customer charge is reasonable.

27. It is reasonable and equitable to make the TOU schedule available primarily to residential customers with usage over 12,000 kWh per year to the extent funding allows.

28. If the A-21 industrial TOU rate were made available to small usage customers, then a large number of customers could have lower bills without any usage pattern changes.

29. It is desirable that the gas and electric discounts to master meter customers be on a consistent basis.

30. It is reasonable that the discount be made as a percentage of lifeline sales.

31. The methods of averaging the cossts of overhead service and underground service as proposed by PG&E is reasonable.

32. The following discounts are reasonable:

1. 32% for DT service.
2. 30% for GT service.
3. 9% for DS service.
4. 16% for GS service.

33. PG&E overcollected $6.3 million from the agriculture customer class.

34. The $6.3 million should be refunded as provided in this order.

35. It is reasonable that the agricultural TOU rates have levelized base rates with time varying ECAC factors and that the on/off-peak ratios be restored at historical levels.

36. The current PG&E method of prorationing bills during lifeline seasonal changes is fairer to all customers than the McKinney method.

37. PG&E's revenue requirement remains unchanged under any prorationing method.

38. Both the PG&E and McKinney methods are difficult to apply and understand.

39. The Macri method eliminates prorationing bills during lifeline seasonal changes.

40. The annual ECAC revenue requirement from A.82-09-51 is $1,478,733,000. ✓

41. The annual ERAM revenue requirement from A.82-09-51 is $81,457,100.

42. The AER revenue requirement from A.82-06-08 is $88,074,000 ✓

43. The attrition allowance from A.60153 (attrition phase) is $156,502,000.

Conclusions of Law - on here

1. All motions not ruled on or previously ruled on ~~are~~ should be denied. ✓

2. PG&E should be authorized to establish the revised rates and charges set forth in the following order which are just and reasonable.

3. The rates and charges authorized here should be effective January 1, 1983.

4. The effective date of this order should be today in order to enable PG&E to file rates which can become effective January 1, 1983.

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35. It is reasonable that the agricultural TOU rates have levelized base rates with time varying ECAC factors and that the on/off-peak ratios be restored at historical levels.

36. The current PG&E method of prorationing bills during lifeline seasonal changes is fairer to all customers than the McKinney method.

37. The Macri method eliminates the need to proration the seasonal lifeline allowance change but creates other, greater inequities.

38. PG&E's revenue requirement remains unchanged under any prorationing method.

39. The annual ECAC revenue requirement from A.82-09-51 is $1,454,110,000.

40. The annual ERAM revenue requirement from A.82-09-51 is $81,457,100.

41. The AER revenue requirement from A.82-06-08 is $162,518,000.

42. The attrition allowance from A.60153 (attrition phase) is $156,502,000.

Conclusions of Law

1. All motions not ruled or previously ruled on should be denied.

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3. The rates and charges authorized here should be effective January 1, 1983.

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