

Decision No. 86632**ORIGINAL**

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of)
 PACIFIC GAS AND ELECTRIC COMPANY for)
 authority, among other things, to)
 change certain rate schedules to)
 implement time varying rates for)
 electric service pursuant to the)
 Second Interim Report in Case No. 9804.)

Application No. 56124
 (Filed December 16, 1975)

(Appearances are listed in Appendix A)

O P I N I O NProcedural Background

On August 31, 1974 the California Legislature adopted Assembly Concurrent Resolution No. 192 which requested the Public Utilities Commission to make a thorough investigation of alternatives to presently constituted rate structures of California electric utilities and of what changes, if any, should be made in such rate structures so that they would tend to discourage, rather than encourage, increased consumption of electricity. Among the alternatives specified by the Legislature was:

- "(4) Requiring new metering which would enable higher prices for consumption of electricity at the demand peaks each day." 1/

1/ The entire text of ACR 192 is reproduced as Appendix A of Decision No. 85559, dated March 16, 1976, in Case No. 9804.

Pursuant to the request of the Legislature, the Commission instituted Case No. 9804, an order of investigation into electric rate structures. In its second interim report to the Legislature, Decision No. 85015, dated October 15, 1975, in Case No. 9804, the Commission noted,

"During the pendency of the investigation in Case No. 9804 we desire that progress be made in implementing the concept of peak load pricing. In furtherance of that end, the respondent electric utilities should file specific proposed peak load tariffs by applications or advice letters for review by our staff and interested parties."

Previously during the course of hearings on Pacific Gas and Electric Company's (PG&E) Applications Nos. 54279, 54280, and 54281 for a general rate increase PG&E had indicated that it would cooperate in the development of peak-load electrical tariffs. Accordingly PG&E developed samples of such tariffs and these samples were reviewed at a series of four informal technical conferences sponsored by the Commission staff and attended by representatives of ratepayer and environmental groups, public agencies, and other interested parties, including most of the active participants in this case.

Following the completion of the informal technical conferences, PG&E filed, on December 16, 1975, the subject Application No. 56124 in compliance with Decision No. 85015. The authority sought would permit PG&E to apply time varying rates to certain of its large electric customers.

Notice of Application No. 56124 was mailed in accordance with Section 454(a) to all affected customers. The matter was assigned to Commissioner Ross and referred to Examiner Boneysteele for hearing. Notice of hearing was sent to affected customers and to known interested parties.

Hearings commenced on March 8 and continued for a total of seven days, concluding on April 14, 1976. Concurrent opening briefs were filed on May 21, 1976 and the matter submitted for decision upon the filing of concurrent reply briefs on June 1, 1976.

Testimony and exhibits were presented by PG&E, the Commission staff, and by the Secretary of Defense on behalf of the consumer interests of the executive agencies of the United States (Department of Defense).

While a number of customers and interested parties appeared at the first day of hearing, only the California Manufacturers Association (CMA), the Environmental Defense Fund (EDF), Monsanto Company (Monsanto), Airco, Inc. (Airco), the Department of Defense, PG&E, and the Commission staff participated in the examination of witnesses and filed briefs.

Decision No. 85559 in Case No. 9804

Subsequent to the commencement of the hearings in this application the Commission issued, on March 16, 1976 in Case No. 9804, Decision No. 85559, entitled "Opinion and Final Report to the Legislature Pursuant to Assembly Concurrent Resolution No. 192, Adopted August 31, 1974". The order in Decision No. 85559 contains several directives to various California electric utilities that are designed to implement peak-load pricing. Ordering Paragraph 1 was directed to the three largest California electric utilities, including PG&E,^{2/} and requested them to propose specific time-of-day pricing tariffs that would cover large usage customers for whom substantially all of the necessary metering equipment had been installed.

^{2/} The other two were San Diego Gas & Electric Company and Southern California Edison Company.

PG&E's Proposal

Application No. 56124, being filed several months prior to the issuance of Decision No. 85559 on March 16, 1976, anticipated that decision in that the rates proposed were limited to large customers who already had recording meters for measurement of kilowatt hour consumption by time of day. PG&E stated, in Application No. 56124 that, should sufficient benefit be demonstrated to support the maintaining of a time-of-day rate design, PG&E would develop proposals for implementing time varying rates for other classes of customers as information about the peak response and potential for shifting demand which results from these rates becomes available. PG&E is currently evaluating a number of alternatives to control loads and meters so that time varying rates can be applied to customers who do not currently have recording meters.

The time varying rates proposed by PG&E are intended to have no effect on PG&E's overall revenues but there would be a shift of revenues between customers depending on their usage in each time period. The time varying rates would be implemented by the filing of a new Schedule No. A-17, General Service-Time Metered, which would be applicable to polyphase alternating current service to all customers of record on September 20, 1975 served under former Schedule No. A-14^{2/} and thereafter to new customers whose maximum monthly demand is 4,000 kw or greater. It would also be applicable to existing customers served under any applicable general service, agriculture power service, refinery, or standby service schedule whose monthly maximum demand is 4,000 kw or greater for 3 consecutive months. Any customer whose aggregate diversified monthly maximum demand at a single service location had

3/ Schedule No. A-14, General Service-Large Demand Metered, was canceled effective September 20, 1975, by order of Decision No. 84902 dated September 16, 1975 in Applications Nos. 54279, 54280, and 54281.

fallen below 3,500 kw for any 12 consecutive months could, at his option, thereafter elect to continue to receive service under Schedule No. A-17 or else elect to be served under any other applicable schedule.

Service supplied under Schedule No. A-17 would be in accordance with contract. The contract would be required for a period of 3 years when service is first rendered under Schedule No. A-17 and for subsequent periods of one year each thereafter, continuing until canceled by either party by one year's written notice. Customers of record on September 20, 1975 served under existing contracts for service under former Schedule A-14 would continue to be served under such contracts except that following the expiration of the initial ten-year period such contracts would continue in effect for subsequent periods of one year each until canceled by either party by one year's written notice.

Not having any empirical studies upon which to base a quantitative determination of the average price elasticity of demand during peak time periods, PG&E could not predict the effect of a time varying rate. The utility therefore presented three example tariffs which were designed to recover the same level of revenue as would otherwise applicable tariffs, but under three assumptions of demand shift. The three examples, designated "A-17A", "A-17B", and "A-17C", were designed assuming a 0 percent, 5 percent, and 10 percent translation of sales from the maximum on-peak period to the partial peak period.

Each of the three examples proposed a fixed customer charge, a set of two seasonal time varying demand charges, and a single set of time varying energy charges. The customer charge would be a uniform \$650 a month for all three examples. The two sets of charges would be applicable to a five-month summer period,

designated "Period A" and for a seven month winter period, designated "Period B". The two sets of demand charges, and the single set of energy charges, would vary by peak, partial peak, and off-peak hours of the day.

The separate summer and winter periods and the peak, partial peak, and off-peak hours were selected by PG&E's witness, rate engineer Stephen P. Reynolds, after an analysis of PG&E's system day load profiles which indicated time periods that could be managed by rate incentives. The analysis showed the need for a seasonal change in the definition of the peak hours, paralleling the seasonal changes in PG&E's load shape. The partial peak hours were selected as those lower-load level hours which could more easily absorb added load than the on-peak hours.

In Mr. Reynolds' opinion the time periods selected for the proposed Schedule No. A-17 tend to offer a significant incentive to shift load.

The three examples, as finally revised at the hearings, are shown on the following tabulation:

	Example A 0% Maximum On Peak KW Reduction Relative To Partial Peak		Example B 5% Maximum on Peak KW Reduction Relative To Partial Peak		Example C 10% Maximum on Peak KW Reduction Relative To Partial Peak	
Customer Charge Per meter per month	\$650		\$650		\$650	
	<u>Period A</u>	<u>Period B</u>	<u>Period A</u>	<u>Period B</u>	<u>Period A</u>	<u>Period B</u>
Demand Charge Per kw of demand in each time interval per month						
On Peak	\$3.07	\$2.05	\$3.15	\$2.10	\$3.22	\$2.15
Partial Peak	0.25	0.25	0.25	0.25	0.25	0.25
Off Peak	-	-	-	-	-	-
Energy Charge Per kwhr in each time interval						
On Peak	.884¢	.884¢	.896¢	.896¢	.910¢	.910¢
Partial Peak	.78¢	.78¢	.79¢	.79¢	.81¢	.81¢
Off Peak	.63¢	.68¢	.69¢	.69¢	.71¢	.71¢

Energy Charges exclude fuel
cost adjustment factor of
0.595¢/kwhr.

Period A would be applicable to meter readings from May 1 to September 30 inclusive for the following hours:

On Peak	12:30 p.m. to 6:30 p.m.	Monday through Friday, except Holidays
Partial Peak	8:30 a.m. to 12:30 p.m. 6:30 p.m. to 10:30 p.m.	Monday through Friday, except Holidays
	8:30 a.m. to 10:30 p.m.	Saturday, except Holidays
Off Peak	10:30 p.m. to 8:30 a.m.	Monday through Saturday, except Holidays

All day Sunday and Holidays

Period B would be applicable to meter readings from October 1 to April 30, inclusive for the following hours:

On Peak	4:30 p.m. to 8:30 p.m.	Monday through Friday, except Holidays
Partial Peak	8:30 a.m. to 4:30 p.m. 8:30 p.m. to 10:30 p.m.	Monday through Friday, except Holidays
-	8:30 a.m. to 10:30 p.m.	Saturdays except Holidays
Off Peak	10:30 p.m. to 8:30 a.m.	Monday through Saturday, except Holidays

All day Sunday and Holidays

The Holidays are: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, and Christmas Day, as said days are specified in Public Law 90-363 (U.S.C.A. Section 6103).

The revenues that would be realized under the three examples, using a fuel cost adjustment factor of 0.595¢ per kwhr, are as follows:

<u>Revenue at Proposed Rates (\$1,000's)</u>			
<u>Alternative Examples</u>	<u>0% Maximum On Peak Kw Reduction</u>	<u>5% Maximum On Peak Kw Reduction</u>	<u>10% Maximum On Peak Kw Reduction</u>
A-17A	129,191	127,517	125,839
A-17B	130,913	129,191	127,480
A-17C	132,726	130,972	129,191

All three of the alternative examples indicate a revenue change of approximately 2.6 percent or 3.4 million dollars occurring as a result of 10 percent reduction in maximum on-peak kw demand. Revenue losses would be slightly higher if some energy and demand is assumed shifted to the off-peak as well as the partial peak period.

Although PG&E at present has no firm data to support any of the percentage alternatives, Mr. Reynolds testified that, in view of the brevity of the on-peak period during the winter season and because the 7-month winter season on the peak time period is not coincident with the typical 8 a.m. to 5 p.m. workday operations of a large number of customers for which the tariff might be applicable, it would appear that the 10 percent figure might be a plausible indicator of the possible response to this tariff.

According to Mr. Reynolds, a close review of the annual load variations for each customer, combined with the recognition that the on-peak hours as defined by the tariff constitute only 13.9 percent of the 8,760 hours in a year, implies that on the average it would be possible for each customer to cut back his load by 10 percent with a resulting shift of kwh's to the partial- or off-peak time periods.

A 10 percent demand reduction in all twelve months was estimated to save a weighted average 105 megawatts of on-peak load per month. This is slightly less than 1 percent of PG&E's summer 1975 system annual peak.

A 5 percent maximum on-peak demand reduction in all twelve months was estimated to have the effect of saving approximately a weighted average of 56 megawatts of on-peak load per month.

Should a time-of-day rate form be adopted by the Commission, it is PG&E's intention to establish and maintain detailed monitoring systems that will attempt to isolate and analyze any load shifting that might occur.

Mr. Reynolds estimated that high load factor customers which tend to be operating continuously during all the defined on-peak periods could face a rate level increase of up to 3 percent. Lower load factor customers whose demands are largely off-peak or partial peak in nature could see a commensurate rate level decrease.

Mr. Reynolds stated that the proposed Schedule No. A-17 would eliminate the minimum billing demand charge and demand ratchet which are a part of PG&E's existing Schedule No. A-13. This would have the net result of encouraging maximum load shifting but it also would have other effects. With no minimum demand charge, there would be less overall revenue stability. If a customer should curtail load completely for maintenance or vacations, compensating revenues must come from those customers which have more constant, continuous loads.

In PG&E's rate change proposal, a section devoted to monitoring and evaluation is outlined. Should a time varying tariff be authorized by the Commission, PG&E feels that it is imperative that the revenue effect of that tariff be annually reported to

the Commission. It is PG&E's intention to include recommendations in those reports for rate level changes to maintain parity of revenues with otherwise applicable schedules. A key variable for analysis would be the average annual ¢/kwh figure from a time-of-day tariff in relationship to the most recent average ¢/kwh figure authorized by the Commission.

PG&E's proposed Schedule No. A-17 contains a special condition prescribing a facility charge. According to Mr. Reynolds, the facility charge is indicative of PG&E's intention that the utility recover its investment in facilities required to serve each of its customers. The facility charge is intended to protect PG&E's investment in excess facilities to those customers which may be able to operate entirely off-peak. Special pumping customers which may only operate periodically or in certain seasons of the year are a particular concern.

Staff Proposal

By staff counsel's opening remarks and by the presentations of the staff witness, supervising utilities engineer Donald L. Houck, the Commission staff stated its agreement with the time periods and rate variations selected by PG&E in the examples PG&E presented in this proceeding.

Mr. Houck, as did Mr. Reynolds previously, testified that the rate and time determinations of the proposed tariffs were not just the project of PG&E alone, but were the product of a series of informal technical conferences in which, as mentioned above, most of the active parties in this proceeding participated. Mr. Houck disagreed, however, with both the 5 percent and 10 percent demand shifts used by PG&E in its example. He proposed instead that the Commission adopt a time-of-day rate that would provide the revenue requirement assuming an expected shift in on-peak demand of 2.5 percent. Mr. Houck's recommendation was based on

his best estimate gained from his participation in Case No. 9804. He also took into consideration the probability, expressed to him by PG&E, that the Commission would again be examining the overall revenue requirements of PG&E in another general rate case within the next two years.

Proposal of the Department of Defense

The only other affirmative presentation was made, in behalf of the Department of Defense, by Daniel J. Reed, a consulting rate engineer. Mr. Reed proposed a monthly customer charge of \$1,600 instead of the \$650 proposed by PG&E. He accepted PG&E's two seasonal periods for use in specifying demand rates but recommended higher demand charges. To offset the higher demand charges, he would have lower uniform, rather than varying, energy rates. Mr. Reed rejected the notion that there would be a significant shift in demand and contended that time varying rates cannot be expected to produce significant shifts in industrial load patterns. To adopt PG&E's 17-A and 17-B proposals assuming 5 percent and 10 percent demand reduction would, to Mr. Reed, be "gold plating" the time-of-day pricing proposals.

The time varying rate form proposed by Mr. Reed is shown in the following tabulation:

Customer Charge		
Per Meter Per Month		\$1,600
Demand Charge		
Per kw of Demand in each	<u>Period A</u>	<u>Period B</u>
time interval		
On-Peak	\$3.85	\$2.75
Partial Peak	1.00	1.00
Off-Peak	-	-
Energy Charge		
Per kwh	0.450¢	0.450¢

Energy charges exclude
fuel cost adjustment factor
of 0.595¢/kwhr.

Mr. Reed's customer charge was taken from a PG&E cost allocation study in Application No. 55509^{4/}, which study indicated that the average customer cost for a customer who formerly took service under now obsolete Schedule No. A-14 would be \$1,600 per month at present rates.

To determine his demand charges, Mr. Reed used a cost allocation study presented by PG&E in Application No. 54279^{5/}. He concluded from that study that about 95 cents per kilowatt per month was attributable to distribution system cost recovery. Mr. Reed said that, unlike operating and transmission equipment, distribution plant is not common to all customers and coincidental system demands do not relate to distribution plant. At the very least, Mr. Reed felt that the partial peak demand charge should reflect distribution plant cost recovery, and, on that basis, selected \$1.00 per kilowatt as the appropriate monthly partial peak charge for both seasonal periods.

To obtain the on-peak demand charges, Mr. Reed subtracted the revenue that would be obtained from his customer and energy charges from the total revenue requirement. The remaining revenue obtained from this calculation was divided by the on-peak kilowatt load to obtain \$3.85 per kilowatt for Period A and \$2.75 per kilowatt for Period B.

^{4/} A general rate increase application for the electric department by which PG&E asked for a revenue increase of \$341,798,000 and by Decision No. 86281, dated August 27, 1976, was granted \$106,027,000.

^{5/} A general rate increase application for the electric department filed August 30, 1973, by which PG&E sought \$158,446,000 and was granted \$150,152,000 by Decision No. 84902 dated September 16, 1975.

For his energy charge, Mr. Reed also relied on the cost allocation study in Application No. 55509 which showed the commodity charge to be approximately 0.450 cents per kilowatt hour for the type of customer contemplated to be served under Schedule No. A-17. This commodity charge did not include the fuel cost adjustment factor of 0.595 cents per kilowatt hour.

According to Mr. Reed, there was no support for the variation in energy rates between the on-peak, partial peak, and off-peak time intervals. He said that PG&E's analysis supporting the tenth of a cent difference in rate for each time interval was fallacious in that it assumed that the next increment of energy generation would come from oil or gas fired generation equipment. To refute this Mr. Reed presented a load curve for a December day which showed that the load following hydroelectric generation was greater than the load following thermal generation.

Mr. Reed was of the opinion that to the maximum extent possible, his approach placed price where cost is. The rate for partial peak periods was adequate for distribution system cost recovery and the price signals given for on-peak consumption, if these signals mean anything at all, are better than PG&E's (\$3.85 rather than PG&E's A-17A rate of \$3.07 per kw per month).

Participation of Other Parties

Although they did not present witnesses, counsel for Airco and Monsanto, for CMA, and for EDF participated in cross-examination and stated their positions by means of briefs.

Airco and Monsanto Positions

Both Airco and Monsanto own and operate numerous manufacturing and production facilities throughout the United States. In California, Airco has seven production facilities, several of which are served by the PG&E electric system. Monsanto has plants located throughout California served by each of the

three major electric companies. Airco and Monsanto are power intensive industries. For some processes, the cost of electricity is as high as 50 percent of the product cost. Accordingly, both companies have an interest in any proceeding where changes in rates or modifications to the rate structure or design are being considered.

The rate design philosophy of Airco and Monsanto is that each customer class and each customer within a customer class should pay rates which reflect, as nearly as possible, the costs which that customer imposes on the utility company.

Airco and Monsanto are not in disagreement with the concept of peak-load pricing. As a matter of fact, it is the belief of both Airco and Monsanto that the theory of peak-load pricing is based on cost of service principles. To the extent that time varying rates can be developed which "track" time varying costs associated with serving different customers and to the extent that those rates can be implemented equitably for the utility's customers, Airco and Monsanto would endorse such rates. As high load factor customers, with all the efficiencies of use that description implies, both companies would, theoretically, benefit.

Airco and Monsanto note, however, there are a number of very practical problems and obstacles, both technological and logistical, associated with peak-load pricing that require resolution before the theory can be expected to function properly.

Airco and Monsanto argue that, though the Commission's Second Interim Order in Case No. 9804 did not specify the class for which peak-load tariffs should be filed, PG&E selected the former A-14 customers for the initial imposition of time varying rates. Keeping in mind the "shift of load" target, the essence of peak-load pricing, Airco and Monsanto view the choice as a pure demonstration of ill-conceived and unnecessary expediency as it is clear that this group of customers has a very level load already, both daily and seasonally.

The two companies object to the seasonal rate form. They note that, in his direct testimony, Mr. Reynolds stated that the seasonal demand differential was based on the fact that the summer peak is broader than the winter peak due to the air conditioning load. Airco and Monsanto say that this has little or nothing to do with the A-14 customer because the air conditioning component of the load of these customers is relatively insignificant. To this Mr. Reynolds, on cross-examination, agreed.

Airco and Monsanto also oppose time varying energy charges. They contend that energy costs do not vary appreciably over a daily cycle and, accordingly, the energy differential proposed is unjustified and improper.

Concerning PG&E's proposed demand charges, Airco and Monsanto take the position that the incentive to shift demand automatically includes the incentive to shift energy while the incentive to shift energy does not necessarily carry with it the incentive to shift demand. They also believe that Mr. Reed's proposed demand and energy charges more properly and accurately reflect demand and energy costs than do the PG&E proposals.

Finally, according to Airco and Monsanto, PG&E's 5 percent (alternative A-17A) and 10 percent (alternative A-17B) assumptions are improper. First of all, they are designed to produce the same revenues as would alternative A-17A, the "no load shift" situation. This means that if the shift of customer-load patterns takes time or if the shift is less than anticipated by alternative A-17B or A-17C, PG&E will overcollect. Arguing that there is very little expected load shift by this group, Airco and Monsanto characterize the higher rates of A-17B and A-17C as being not only improper in the context of sound ratemaking principles but as simply coercive. Under A-17C, for example, the class would have to shift load by 10 percent to hold rates for the class at the same level. They

argue that rates should not be set to require a shift to avoid increased rates and that even if a shift should be realized, it would be difficult, indeed impossible, to confer the deserved benefit of the reduced system demand on the class of customers that, because of the shift of load of that class, was responsible for the reduced system demand.

It is Airco's and Monsanto's recommendation that if peak-load pricing is to be adopted, it be Mr. Reed's proposed rate, without its seasonal demand charge variation. Since, they contend, there is no basis for seasonal demand variation, the charges, both energy and demand, as contained in Mr. Reed's rates more nearly reflect the costs of energy and demand during the peak, partial peak and off-peak hours than does the PG&E rate in its various forms.

CMA's Position

CMA^{6/} participated on behalf of its members, a number of whom presently receive electric service from PG&E on Schedule No. A-13, and are proposed to be placed on Schedule No. A-17 for service under time varying rates. CMA was very active in Case No. 9804 and in that proceeding expressed its doubts concerning the utility of peak-load pricing generally and peak-load pricing aimed solely at large industrial customers in particular. They maintain those reservations, but do not oppose PG&E's proposal to implement time varying rates in this proceeding.

^{6/} CMA is a voluntary non-profit association whose membership comprises varied industries, large and small, with approximately 1,000 manufacturing plants in California. Membership in CMA is limited to manufacturers, processors, fabricators, and those engaged in allied research. No public utility or carrier is eligible for membership.

CMA is, however, strongly opposed to PG&E's request for authority to set the rates in question at levels which anticipate demand shifts and energy usage reductions which could reduce revenues. CMA contends that, although PG&E claims that no increase in revenues is being sought, such is clearly the case, and that any rates authorized in this proceeding should be set on the basis of sales and revenues authorized by Decision No. 84902 in PG&E's last general rate proceeding.

CMA submits that the question of whether time-of-day rates will result in reduced on-peak kw demands and the amount of that reduction can only be ascertained through actual experience. If time-of-day rates are to be adopted, CMA endorses the monitoring system proposed by PG&E, and the Commission's intention to monitor the effect of such rates as expressed in Decision No. 85559. At this time, according to CMA the 5 and 10 percent on-peak reductions predicted by PG&E are totally speculative and cannot support the increased rates proposed in its application.

CMA argues that PG&E proposes to increase the rates of large light and power customers when such increase is not justified on the basis of the cost allocation used in its last rate proceeding, Application No. 54279. CMA notes that PG&E's alternatives A-17B and A-17C increase the demand rate for the on-peak period but leave the rate for off-peak periods at the same level as the basic proposal. Thus the high-load factor customer who cannot shift his load to reduce his on-peak demand will subsidize the low-load factor customer who may. The PG&E proposal would also increase the energy charge for usage in all three time periods in alternatives A-17B and A-17C. CMA states that the rates for this class of customer have traditionally been based on cost allocation considerations, the class paying its proper

share of total cost of service. It is CMA's contention that, since the issuance of Decision No. 84902, this class of customer has also paid a substantial subsidy to support the lifeline benefits accorded the domestic class. To CMA the placing of additional revenue requirements on this class of customer, or on just part of this class, is totally unjustified on a cost allocation basis.

CMA states that, should system peak demand be reduced through implementation of this proposed tariff schedule, other customers on the system whose loads are growing will benefit by the availability of that peak usage. Consequently they should share in the cost of that additional peak usage available to them. If the Commission believes that it must protect PG&E against all possibility of lost revenue, even so remote a possibility as that presented here, CMA urges the Commission to spread the rate increase to all customer classes.

CMA looks forward with interest to the implementation of time-of-day rates for large light and power customers. It believes that experience is required for the Commission to ascertain the effectiveness or ineffectiveness of peak-load pricing concepts. It strongly opposes PG&E's proposal, however, to increase the rates to such customers as part of its change to time-of-day rates. CMA urges the Commission to reject alternatives A-17B and A-17C and to adopt A-17A.

EDF's Position

EDF supported PG&E's position and, in addition, asked the Commission to "flesh out" in this proceeding, its position on use of marginal cost data in electrical pricing.

In support of PG&E, EDF argues that, although PG&E has been extraordinarily fortunate in having available load-following hydroelectric capability which has enabled it to operate its fossil fuel facilities very efficiently at almost all

times of the day and year and thus maintaining a small differential in energy costs of on-peak and partial peak generation, PG&E's years of good fortune are probably drawing to a close, as it has already begun the process of adding inefficient gas turbine units to its system, for peaking purposes, and has applied to the Commission for permission to build a large pumped storage peaking facility. According to EDF, one can only assume that, in the future, PG&E's incremental cost of supplying on-peak energy will increase relative to its cost of supplying off-peak energy and that the two tenths of a cent differential which it has proposed between peak and off-peak energy rates is an absolute minimum if its rates are to reflect real differences in cost of providing service to its customers.

EDF contends that it is wrong to rely on differentials in demand charges alone to constrain peak demands. Such reliance focuses too narrowly on the reactions to a rate schedule by specific customers, without reflecting adequately upon the diversity which all the customers in the proposed Schedule No. A-17 give to the PG&E system. A greater price signal in the on-peak energy charge encourages customers to conserve throughout the on-peak period, not just at times when their maximum demand for the billing period might be exceeded.

Discussion

Aside from the EDF's request for a more energy intensive on-peak rate and that the Commission "flesh out" its views on marginal cost pricing, the major difference between the various participants seems to be whether we should accept PG&E's time varying rate or that of the Department of Defense. A secondary difference is, should we recognize, in rates, any shift in peak-load demand, and if so, how much.

Concerning EDF's request that we expand upon our treatment of marginal cost pricing in Decision No. 85559, we are of the opinion that this specific rate proceeding is not an appropriate one for a general philosophical pronouncement. As we indicated in Finding 52 of Decision No. 85559, for the Commission to make specific use of marginal cost and elasticity data, further development of such data is required. We prefer to have the benefit of more data before expanding our treatment of marginal cost pricing. Consequently, we will not comply with EDF's request in this proceeding.

The informal open conferences which preceded the filing of the PG&E application that we are here considering apparently succeeded, for the most part, in developing a consensus as to dividing the year into summer and winter periods, as to the higher demand charge in summer, and as to the definition of peak, partial peak, and off-peak periods.

The first substantive issue that we must resolve is whether our time varying rate should depend solely on differences in demand charges, as proposed by the Department of Defense and supported by Airco and Monsanto, or whether it would be more effective to have varying demand and energy charges, as proposed by PG&E and supported by the staff, CMA, and EDF.

We concur with the second approach. As EDF points out, on a marginal or incremental basis, in the future the costs to PG&E of supplying on-peak energy will increase relative to those of supplying off-peak energy. Future incremental on-peak energy will typically be supplied from fossil fuel combustion. It is true that the overall cost of fuel will be recovered through the fuel cost adjustment, but Mr. Reynolds of PG&E explained that, as the

load requirement increases during the day, the dispatch computer will obtain additional generation from the steam unit or units requiring the least additional amount of fuel. Conversely, as the load requirement decreases, the unit or units providing the largest reduction in fuel will be unloaded first. The fuel clause, by itself, does not recognize daily incremental or marginal changes in fuel cost. For this recognition a time varying energy charge is required.

We will, therefore, adopt a rate form which will give more weight to the marginal cost of energy during on-peak and partial-peak periods while maintaining a level of not less than an average energy cost basis during off-peak periods. It is recognized that both rates are substantially below the marginal cost of energy generated from low sulfur fuel oil.

The only remaining point of controversy is whether the time varying rate should reflect any overall conservation in use of electric energy. If such conservation does take place PG&E's revenues from the A-17 schedule will be reduced and, as we have explained, PG&E does not wish to be penalized by the operation of a time varying rate schedule. Conversely, the large customers, as represented by the Department of Defense, Airco, Monsanto, and the CMA, do not wish to provide the windfall that would accrue to PG&E from the operation of a time varying rate schedule based on conservation that did not take place. We appreciate both these concerns.

It is obvious that a time varying rate designed to shift load through incentives in price would, should it operate as intended, result in diminution of revenue.

PG&E's initiative in filing the first application for time-of-day rates and in assisting in developing a complete record in this proceeding should be commended. In order to preserve revenue stability in these early stages of time-of-day pricing and to prevent diminution in revenue, we will recognize the 10 percent figure developed by PG&E and will require institution and maintenance

of a monitoring and evaluation program. The large users have had early notice of the Commission's policies on rate structure and have had the opportunity to adjust their operations to reduce the burden of such rate changes. The customers' demonstration of the ability to shift demand and conserve energy will be given careful consideration in subsequent proceedings.

Implementation

The rates that we are authorizing in the order that follows will be based on the criteria previously indicated and allowing for a 10 percent load shift. We have recently issued a combined decision in Applications Nos. 55509 and 55510 of PG&E for general rate increases for its electric and gas departments.^{7/} The Schedule No. A-17 that we are authorizing will reflect the electric department revenue requirements determined in that proceeding and will be consistent with the rate schedules we authorized in that decision.

Findings

1. A time varying rate electric schedule similar to Schedule No. A-17, General Service-Time Metered, as proposed by PG&E should be authorized.
2. The rates contained in such a schedule should be those proposed in Example A in PG&E's application, modified to reflect this opinion and a 10 percent shift in load from the on-peak period to the partial peak period, and further modified to reflect the electric department revenue requirements that we have determined in Decision No. 86281 in Application No. 55509.

^{7/} Decision No. 86281, dated August 27, 1976.

3. PG&E should be authorized to modify its other rate schedules, as proposed in the application, to accommodate Schedule No. A-17.

4. PG&E should be authorized and directed to institute and maintain the monitoring and evaluation program proposed in its application.

5. This proceeding is not an appropriate one in which to significantly expand the Commission's treatment of marginal cost principles expressed in Decision No. 85559.

The Commission concludes that Application No. 56124 should be granted to the extent set forth in the order which follows.

O R D E R


IT IS ORDERED that:

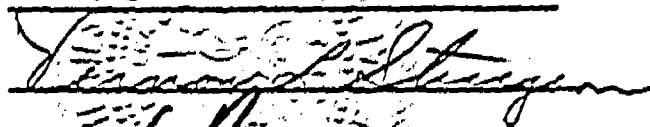
1. Pacific Gas and Electric Company is authorized to file with this Commission, not later than thirty days after the effective date of this order, in conformity with the provisions of General Order No. 96-A, revised tariff schedules with rates, charges, and conditions modified as set forth in Appendix B attached to this order and, on not less than thirty days' notice to the public and to the Commission to make the revised tariffs effective.

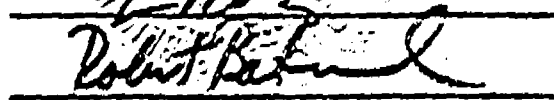
2. Pacific Gas and Electric Company is authorized and directed to institute and maintain the monitoring and evaluation program proposed in Section D of Exhibit C of Application No. 56124. The report to the Commission required by paragraph 7 of the program shall be filed annually, for the preceding calendar year, on or before March 31. The first such report shall be due on March 31, 1977, and shall be for that portion of 1976 for which the time varying rates are effective.

The effective date of this order shall be twenty days after the date hereof.

Dated at San Francisco, California, this 16th
day of NOVEMBER, 1976.


President




Commissioners

Commissioner William Symons, Jr., being necessarily absent, did not participate in the disposition of this proceeding.

APPENDIX A

LIST OF APPEARANCES

Applicant: Kermit R. Kubitz, Attorney at Law, for Pacific Gas and Electric Company.

Protestant: Dr. C. Edward Taylor, for Louisiana-Pacific Corporation.

Interested Parties: Robert Young, for Federated Department Stores, California Retailers Association; James W. Scabaretti, for Liquid Air, Inc.; Robert E. Shaw, for Mobil Oil Corporation; Henry R. MacNicholas, Attorney at Law, for Airco, Inc. and Monsanto Company; Guy Halgren, for California Energy Resources Conservation and Development Commission; Thomas J. Graff and Wayne R. Z. Willey, Attorneys at Law, for Environmental Defense Fund; Norman Elliott and John McClure, Attorneys at Law, for Committee to Protect California Economy; William H. Edwards and William L. Knecht, Attorneys at Law, California Farm Bureau Federation; Colonel Frank J. Dorsey, for Consumer Interests of All Executive Agencies of the United States; Gordon E. Davis and William H. Booth, Attorneys at Law, for California Manufacturers Association; John R. Asmus, Jr., for San Diego Gas & Electric Company; Tom Knox and Bob Shillito, for California Retailers Association; Edward Mrizek, for the City of Palo Alto Utilities; Daniel J. Reed, for the Department of Defense; and George B. Sheer, for Kaiser Steel Company.

Commission Staff: Peter Arth, Jr., Attorney at Law, and Donald L. Houck.

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PACIFIC GAS AND ELECTRIC COMPANY

Schedule No. A-17

General Service - Time Metered

APPLICABILITY

This schedule is applicable to polyphase alternating current service for all customers of record on September 20, 1975 served under former Schedule A-14 and thereafter to new customers whose maximum demand in any time period is 4,000 kw or greater and to existing customers served in strict accordance with any applicable General Service, Agriculture Power Service, Refinery or Standby Service Schedule whose monthly maximum demand is 4,000 kw or greater for 3 consecutive months. Any customer whose aggregate diversified monthly maximum demand at a single service location has fallen below 3,500 kw for any 12 consecutive months may, at his option, thereafter elect to continue to receive service under this schedule or elect to be served under any other applicable schedule.

TERRITORY

The entire territory served.

RATES

	<u>Per Meter Per Month</u>	
Customer Charge	\$715	
\$ Per Maximum Kw Demand in Each Time Interval:	<u>Period A</u>	<u>Period B</u>
On Peak	\$3.45	\$2.30
Plus Partial Peak	0.28	0.28
Plus Off Peak	-	-
\$ Per Kwhr in Each Time Interval:		
On Peak01218	.01218
Plus Partial Peak01018	.01018
Plus Off Peak00818	.00818

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ENERGY COST ADJUSTMENT

An Energy Cost Adjustment, as specified in Part B of the Preliminary Statement, will be included in each bill for service, including bills for minimum charges. The Energy Cost Adjustment shall be the product of the total kilowatt-hours for which the bill is rendered multiplied by \$0.00816 per kilowatt-hour. (The Energy Cost Adjustment amount is not subject to any adjustment for voltage or power factor.)

FUEL COLLECTION BALANCE ADJUSTMENT

A Fuel Collection Balance Adjustment, as specified in Part B of the Preliminary Statement, will be deducted from each bill for service, including bills for minimum charges. The Fuel Collection Balance Adjustment amount shall be the product of the kilowatt-hours for which the bill is rendered multiplied by \$0.00042 per kilowatt-hour. (The Fuel Collection Balance Adjustment amount is not subject to any adjustment for voltage or power factor.)

SPECIAL CONDITIONS

1. Time Periods:

Period A would be applicable to meter readings from May 1 to September 30 inclusive for the following hours:

On Peak	12:30 p.m. to 6:30 p.m.	Monday through Friday, except holidays.
Partial Peak	8:30 a.m. to 12:30 p.m. 6:30 p.m. to 10:30 p.m.	Monday through Friday, except holidays.
	8:30 a.m. to 10:30 p.m.	Saturday, except holidays.
Off Peak	10:30 p.m. to 8:30 a.m.	Monday through Saturday, except holidays.

All day Sunday and holidays.

Period B would be applicable to meter readings from October 1 to April 30 inclusive for the following hours:

On Peak	4:30 p.m. to 8:30 p.m.	Monday through Friday, except holidays.
Partial Peak	8:30 a.m. to 4:30 p.m. 8:30 p.m. to 10:30 p.m.	Monday through Friday, except holidays.
	8:30 a.m. to 10:30 p.m.	Saturdays, except holidays.

(Continued)

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SPECIAL CONDITIONS - (Contd.)

Off Peak	10:30 p.m. to 8:30 a.m.	Monday through Saturday, except holidays.
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All day Sunday and holidays.

2. Holidays: The holidays specified in this schedule include: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, and Christmas Day, as said days are specified in Public Law 90-363 (U.S.C.A. Section 6103).
3. Maximum Demand: The maximum demand in any month for each time period will be the maximum average power taken during any 30-minute interval within the time period, but not less than the diversified resistance welder load computed in accordance with Rule No. 2; provided, that in cases where the use of energy is intermittent or subject to violent fluctuations, either a 5-minute or a 15-minute interval may be used.
4. Voltage Adjustment: The above charges are applicable without adjustment for voltage when (a) delivery is made at less than 2 kv, or (b) when delivery is made by means of Utility-owned transformers at a distribution voltage other than a standard primary distribution voltage, or (c) when delivery is made at a voltage that requires more than one stage of transformation from transmission voltage. When delivery is made at the standard primary distribution voltage at 2 kv or above available in the area from the Utility's distribution line or, where the Utility has elected to supply service at a standard primary distribution voltage from a transmission line, for its operating convenience, from Utility-owned transformers on the customer's property, the above charges for any month will be reduced by 15¢ per kw of maximum on-peak demand in the month. When delivery is made at transmission voltage (60 kv and above), the above charges for any month will be reduced by 25¢ per kw of maximum on-peak demand in the month. The Utility retains the right to change its line voltage at any time, after reasonable advance notice to any customer receiving a discount hereunder and affected by such change, and such customer then has the option to change his system so as to receive service at the new line voltage or to accept service through transformers to be supplied by Utility subject to the voltage adjustment above.
5. Power Factor: The total charge for any month as computed on the above rates will be decreased or increased, respectively, by 0.1 percent for each 1 percent that the average power factor of customer's load in the month was greater or less than 85 percent, such average power factor to be computed (to the nearest whole percent) from the ratio of lagging kilovolt ampere hours to kilowatt-hours consumed in the month.

(Continued)

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SPECIAL CONDITIONS - (Contd.)

6. Voltage: Service on this schedule will be supplied at the voltages as described in Electric Rule 2.
7. Facility Charge: Where the estimated installed cost of only those facilities necessary to provide regular service which are installed after _____, is in excess of the estimated annual revenue to be derived from service under this schedule (excluding that portion of revenues equal to the product of estimated annual kilowatt-hour usage times the sum of the Fuel Cost Adjustment and the Base Weighted Average Cost of Fuel and Purchased Energy) an additional monthly charge of 1-3/4 percent of such excess will be made. If the customer elects to advance such excess cost to the Utility, the additional monthly charge will be 1 percent of such excess cost. Upon discontinuance of the use of such facilities due to termination of service or otherwise, the customer shall pay to the Utility its net cost to install and remove such facilities. Any customer advance for costs of such facilities shall be applied as a credit toward such net installation and removal costs.
8. Contract: Electric service supplied under this schedule shall be in accordance with a contract authorized by the CPUC. Such contract will be required for a period of three years when service is first rendered hereunder and for subsequent periods of one year each thereafter, continuing until canceled by either party by written notice one year in advance of the initial period or any subsequent period. Customers of record on September 20, 1975 served under existing contracts for service under former Schedule A-14 will continue to be served under such contracts except that following the expiration of the initial ten-year period such contracts will continue in effect for subsequent periods of one year each until canceled by either party by written notice one year in advance of the initial ten-year period or any subsequent one-year period.