

ORIGINAL

Decision No. 92792 MAR 17 1981

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company for the Establishment of Tariff Schedule G-55A - Cogeneration Natural Gas Service and a Standard Form Contract to Be Used with Schedule No. G-55A and for Addition of a Definition of Cogeneration to Rule No. 1.

Application No. 59459
(Filed February 19, 1980)

Application of Southern California Gas Company to establish a new rate schedule for cogeneration; to add definitions related to cogeneration to Rule No. 1; to revise Rule No. 23 to provide a special priority for cogeneration; and to provide an addendum for special gas service to the standard customer contract.

Application No. 59684
(Filed May 21, 1980)

In the Matter of the Application of San Diego Gas & Electric Company for Approval to Include Cogeneration Schedule G-CEG in Its Gas Department Tariffs.

Application No. 59690
(Filed May 21, 1980)

Robert Ohlbach, Daniel E. Gibson, and Shirley Woo, Attorneys at Law, for Pacific Gas and Electric Company, Stephen A. Edwards, Jeffrey Lee Guttero, and William L. Reed, Attorneys at Law, for San Diego Gas & Electric Company; and Robert B. Keeler and Douglas Kent Porter, Attorneys at Law, for Southern California Gas Company; applicants.

Robert E. Burt, for California Manufacturers Association; John Witt, City Attorney, by William S. Shaffran, Attorney at Law for City of San Diego; Harry K. Winters and Allen B. Wagner, Attorney at Law, for University of California; Morrison and Foerster, by Charles R. Farrar, Jr., and John M. Adler, Attorneys at Law, for Kerr-McGee Chemical Corporation; Barry F. McCarthy, Attorney at Law, for City of Santa Clara; John C. Lakeland, for Mass-Production Systems; Phillip R. Mann, Attorney at Law, for P. R. Mann & Associates; Kenneth Strassner and Rex S. Heinke, Attorneys at Law, and James Tanner, for Kimberly-Clark Corporation; and Burt Pines, City Attorney, by Ed Perez, Attorney at Law, for City of Los Angeles; interested parties. Ellen LeVine, Attorney at Law, and John Dutcher, for the Commission staff.

O P I N I O N

Summary and Background

Cogeneration is a potentially major energy resource and conservation measure which is defined as the sequential production of electricity and heat, steam or useful work from the same fuel source. While the thermal efficiency of electric generation from the typical utility facility is only 35-40% (i.e., the typical utility plant loses almost 2/3 of the available energy as heat to the environment), cogeneration achieves 65-85% efficiency through the sequential use of fuel. Although an electric utility typically requires some 10,000 British thermal units (Btu) of heat from fossil fuel to generate one kilowatt-hour (kWh), a cogenerator typically requires only 4,000-7,000 Btu.

In addition to increasing the efficiency with which fossil fuel is used to generate electricity, cogeneration offers numerous other benefits. Cogeneration facilities typically are designed, constructed, and operational in a shorter period of time than most utility plant. In a period when energy forecasts and capital markets are uncertain, cogeneration can provide additional supplies of electricity.

The California Public Utilities Commission seeks actively to encourage the development of cogeneration through all actions consistent with the interests of the utilities and their ratepayers. This order ensures that the cogenerator with a facility which is typically more thermally efficient than the utility plant can buy natural gas it uses to generate electricity at a rate no higher than that which the utility pays for gas it uses to generate electricity. To the extent that cogeneration is more thermally efficient than the utility plant which produces electricity alone, the Commission seeks to reward this thermal efficiency and offset some of the cogenerator's capital investment by providing the cogenerator with the amount of natural gas the utility would require to produce an equivalent amount of energy (kWh), or the amount required by the cogeneration facility for the production of electricity and steam -- whichever is less.

By Decision No. 91239 (January 15, 1980), Pacific Gas and Electric Company (PG&E) filed Advice Letter No. 1065-G which set forth its Schedule No. G-55A natural gas rate for cogenerators. The matter was set for hearing as a result of protests filed by Kerr-McGee, Amstar Corporation (Amstar), and the University of California (University) over the amount of gas to which this rate should apply. Because of the generic nature of this issue, the Commission asked the other major gas utilities, Southern California Gas Company (SoCal) and San Diego Gas & Electric Company (SDG&E), to file applications for proposed tariff schedules and standard form contracts for a cogeneration natural gas rate. SoCal and SDG&E filed Application Nos. 59684 and 59690 respectively on May 21, 1980, and the matters were consolidated for hearing.

Eight days of hearing were held in Los Angeles and San Francisco before Administrative Law Judge Burt Banks. The three major gas utilities, the Commission staff, Kerr-McGee, the University, Kimberly-Clark, and the California Manufacturers Association (CMA) testified. The matter was submitted on August 20, 1980 with opening briefs and closing briefs filed October 8 and 20, 1980 respectively. In addition to the three applicants and the staff, Kerr-McGee, Kimberly-Clark, the University, and the City of San Diego (San Diego) submitted briefs.

Position of PartiesPG&E (Application No. 59459)

PG&E's proposed gas rate for cogenerators (Schedule 55A)^{1/} makes natural gas available to cogenerators at the rate the electric department buys natural gas it uses to generate electricity. Under PG&E's proposal, the amount of gas used for cogeneration which would qualify for the G-55A rate equals the amount of gas PG&E's steam generation plants avoid burning because the cogenerator is producing the electricity, but no more than the actual amount of gas consumed in the cogeneration facility. The cogeneration gas rate applies only to that gas which is used sequentially in the production of electricity and heat, steam or useful work. Since PG&E requires .114 therms (11,400 Btu) to produce and transmit an incremental kilowatt-hour (kWh), each kWh produced by a cogenerator can be seen as displacing or avoiding 11,400 Btu of fuel consumption in PG&E's generating facilities.^{2/}

PG&E notes that gas-fired cogeneration provides two principal benefits: 1) the more efficient use of gas when it is used sequentially to produce electricity and steam, heat or useful work,

^{1/} Since the G-55 rate may sometimes be higher than the otherwise applicable industrial rate, PG&E proposes to make the natural gas rate for electric generation by cogenerators equal to the lesser of the two rates.

^{2/} PG&E's annual average incremental heat rate is 10,860 Btu/kWh as projected in its 1980 test year general rate case. That figure is increased by 5% for transmission losses to 11,400 Btu/kWh and divided by 100,000 Btu to give .114 therms/kWh.

and 2) an additional source of electrical capacity. The electricity-tied nature of the proposed PG&E cogeneration gas rate ensures that larger amounts of gas qualify for the cogeneration gas rate as greater amounts of electricity are produced. Thus this rate promotes a high load factor operation of electric equipment, while a simple cogeneration gas rate need not produce any additional electric production from either new or existing electrical equipment.

PG&E states that proposals by other parties fail to establish a reasonable balance between potential costs and benefits. Bruce Smith, a rate engineer testifying for PG&E, says that there are several reasons for standardizing the amount of gas (i.e., setting it equal to 11,400 Btu/kWh, the utility's average incremental heat rate) for which the cogenerator qualifies, versus providing gas for the entire cogeneration facility. These include:

"[1] a uniform standard would treat all cogenerators equally - cogenerators who produce the same amount of electric energy would receive the same benefit regardless of the amount of steam produced in the cogeneration process....

"[2] gas ratepayers with higher priorities, who will shoulder the revenue shortfall caused by this proposed rate, would not be subsidizing the production of large amounts of process steam relative to electric output or through non-sequential energy use. PGandE estimates that a rate reduction to the G-55 level for all gas consumed by existing cogenerators would result in a revenue shortfall of approximately \$9,200,000 (based on rates in effect June 1, 1980). Based on the data from the cogeneration survey conducted in 1979, a rough estimate of the revenue shortfall based on PGandE's proposal would be \$2,970,000.

"[3] in addition to rewarding energy efficiency, the proposed standard gives the required incentive for electric generation. This incentive, in conjunction with proposed agreements for the sale by cogenerators of electricity to PG&E, would encourage plant and process designs which optimize electric capacity relative to process steam demand...

"[4] this standard follows the avoided cost principles prescribed by the Commission in Decisions No. 91109 and No. 91239. The .114 therms per kilowatthour factor represents the thermal energy input which PG&E avoids by operation of cogeneration. If the energy input were gas, it would be priced to PG&E's electric generation operations at the G-55 rate, equivalent here to the G-55A rate."

Mr. Smith sponsored Exhibit Nos. 3 and 4. Exhibit 3 shows the relationship between the quantities of gas supplied under the PG&E proposal and the amounts required by cogeneration facilities for the production of both steam and electricity. Also shown is the amount of fuel saved by a cogenerator producing one kWh of electricity as opposed to PG&E producing one kWh in a central plant. Exhibit 4 shows how PG&E's proposal rewards more efficient production of electricity. It also shows that for a given level of steam produced (e.g., 10,000 Btu), overall plant efficiency declines as electrical output increases (e.g., from 85% to 77.72% as electrical output goes from zero kWh to 10 kWh). However, the combined or sequential production of electricity and steam is more efficient than if the two were produced separately, and the cogenerator's incremental

heat rate is less than the utility's. (This example assumes that the cogenerator requires an additional 4,500 Btu to produce a kWh of electricity versus the utility's 11,400 Btu.)

While PG&E argued that cogenerators should receive gas at the same rate as the electric utility for the cogeneration of electricity, it maintained that no such treatment should apply to mechanical power. An instance was cited where an industrial cogenerator, wanting to take advantage of avoided cost pricing and a cogeneration gas rate, would install electrical generating equipment to create mechanical power and electricity, although only mechanical power was needed. (This results in an estimated 10% loss of efficiency.) Bruce Smith said he did not feel that a cogeneration rate applied to mechanical power would necessarily increase the amount of mechanical cogeneration, but that it would be installed for other reasons. Moreover, existing electrical incentives (avoided cost pricing) would be a more important factor in a firm's decision to produce electrical power versus mechanical power alone.

PG&E also argued that cogenerators who burn a mix of fuels (including natural gas) simultaneously in the cogeneration process should receive gas on a pro rata basis. For example, if x Btu of oil and y Btu of gas are burned to produce energy (kWh), then the cogenerator should receive that proportion of the total Btu (i.e., $y/(x+y)$) required to produce the kWhs. This is consistent with the utility's position to encourage the efficient use of gas and

production of electricity within the framework of how much gas the utility requires to produce the same energy (kWh), but in no event no more than the actual amount of gas the cogenerator uses in the cogeneration process.

SoCal (Application No. 59684)

Donald Neill, tariff administration manager, and Frank Morris, commercial/industrial market services manager, testified for SoCal. Mr. Morris says that SoCal views increased installation of cogeneration facilities as advancing a specific public goal, i.e., reduced dependence on Persian Gulf oil through the more efficient use of fossil fuels. An incentive rate which encourages energy users to install cogeneration facilities promotes conservation. Thus Mr. Morris urged the Commission to structure its decision to encourage the optimum number of energy users to install efficient cogeneration facilities and to encourage such users to design plants which result in the most efficient use of fuel. SoCal cautioned that any incentive rate must be reasonable and not place an undue burden on other customers. SoCal says that its proposed gas rate for cogenerators is an added incentive needed to encourage cogeneration.

SoCal's proposal contains three elements. It proposes that : :
(1) a commodity rate for gas usage in qualifying cogeneration facilities be set at 1.5 cent/therm below the commodity rate of its GN-5 Schedule; (2) that a special end-use priority level, P-3A be set^{3/} for gas used in qualifying cogeneration facilities; and (3) as an added incentive, that high pressure gas be delivered to cogenerators when available and essential to the efficient operation of a qualified cogeneration facility.

A customer must be a qualifying cogeneration facility with equipment installed and placed in operation to be eligible for the commodity rate and P-3A priority status. A determination of a customer's need for additional gas supply facilities will be made during the project's feasibility phase. SoCal defines a qualifying cogeneration facility as "A cogeneration facility meeting the applicable operating and efficiency standards of 18 CFR Part 292.205(a) and (b) and the ownership criteria specified in 18 CFR Part 292.206 as set forth in FERC Order No. 70 in Docket No. RM79-54 or any superseding order." SoCal argues that the FERC standard be used to determine qualifying status to ensure uniformity. This would reduce the burden on customers, utilities and regulatory agencies.

^{3/} In Decision No. 92704 (February 18, 1981) in Case No. 9642, the Commission adopted a P-3A priority for cogeneration facilities.

To further encourage cogeneration, SoCal proposes to modify its policy on high pressure delivery for qualifying cogeneration facilities. Prime movers installed as part of cogeneration systems frequently require high pressure natural gas to operate. This pressure may not be available at the nearest point of adequate volumetric supply. If adequate gas pressure is not available, a potential cogenerator could be faced with making a large capital investment in compression equipment. However, increased gas pressure may be available within reasonable distance which could be reached by a parallel or reinforced gas main. SoCal proposes to deliver this high pressure gas to the cogenerator when it is available and essential for efficient operation of a qualifying cogeneration facility. However, the customer would have to agree to a surcharge sufficient to cover the cost of additional main and/or service facilities.

SDG&E (Application No. 59690)

Douglas P. Hansen, a supervising rate analyst, testified for SDG&E. He stated that SDG&E's proposed tariff would provide the incentive to encourage customers to invest the necessary capital to develop cogeneration facilities and that the special rate should be available to all gas customers who are cogenerators regardless of priority classification. Furthermore, he said that SDG&E's proposal is the simplest and easiest to administer of the three utility proposals.

Under SDG&E's proposal, all qualifying cogeneration facilities (pursuant to 18 CFR Part 292)^{4/} would receive its GN-5 rate. This is equal to the rate at which SDG&E buys natural gas to generate electricity and would apply to all natural gas used in the sequential production of electricity and steam, heat, or process work. A cogenerator would have the option of any alternative rate for which he would otherwise be eligible, if this rate were less than the GN-5 rate. To ensure that the GN-5 rate is applied to gas used in the cogeneration facility only, SDG&E would require separate metering of the facility. The utility would also provide high pressure gas service to a cogenerator to the extent the high pressure gas is available on its system. Finally, SDG&E would not require the cogenerator to have a standby fuel capability in order to be eligible for the cogeneration gas rate.

Commission Staff

The Commission staff states that the threshold issue is whether a special gas rate for cogenerators is appropriate. Victor Cassman, an associate engineer, and Paul A. Grimard, a research analyst, testified for the staff.

^{4/} Any customer classified under Gas Rule 14 as Priority 1, 2, 3 or 4 who provides SDG&E with a copy of a certificate issued by a state or federal agency saying it is a qualified cogeneration facility would be eligible for this rate.

Using the estimated overall efficiency of cogenerators under six different cogeneration models, Mr. Cassman compared the return on investment (ROI) which potential cogenerators would receive under the PG&E and SoCal incentive rate proposals. With an installed cost of \$400 per kilowatt, he determined that the ROI would vary from 48 to 78 percent.^{5/} In each instance the cogenerator would realize a much larger return on electric sales than he would on the fuel credit. As to the difference between the PG&E and SoCal proposals, he stated that it appeared that the SoCal proposal would not encourage the cogenerator to maximize his cogeneration effort. Finally, he stated that for each 1000 MW of cogeneration, the utility would experience a gas revenue shortfall of \$20 million under the PG&E proposal and \$75 million under the SoCal proposal.

Mr. Grimard, the staff policy witness, commented on the proposed cogeneration gas rates. He had some basic objections to the introduction of a special gas rate for cogenerators at this time, since the major incentive for on-site electric power cogeneration has been and remains the lower cost of such power to the cogenerator in comparison to the cost of power supplied by the electric utility. He cited specific examples to support this. Since cogeneration is

^{5/} The ROI would vary depending on whether the unit was a topping or bottoming cycle. Mr. Cassman's calculations did not take into account taxes and interest payments.

becoming increasingly cost-effective due to increases in the price of oil and thus the price of electricity, he feels that additional government encouragement is not needed. Such problems would be exacerbated by differences between customers as to the value of mechanical power versus electric generation and the relative efficiency of competing processes. Further, he stated that any gas incentive rate might have the result of encouraging gas consumption in preference to alternate fuels. Finally, he opposed the rate incentive since it would further complicate rate design by adding a special rate for another unique class of customers, which would result in a revenue shortfall for the utility and thus a revenue requirement increase for another class of customer. He supported the staff proposal in Case No. 9642 to provide a higher priority for cogenerators which would provide greater assurance of gas supply.

Staff argued that if the Commission felt that a cogeneration gas rate were warranted, a PG&E-type proposal be adopted.

Kerr-McGee

Kerr-McGee proposed that a natural gas cogeneration rate be set for cogenerators at the lower of two levels: 12 percent below the applicable industrial rate or equal to the utility electric generating rate.

Robert N. Danziger of Jet Propulsion Laboratory, Robert Locke of Kerr-McGee's Technical Operations Division, and Jeffrey W. Stallings of Stanford Research Institute testified for Kerr-McGee.

Mr. Danziger testified that federal regulatory policy regarding cogenerators could be used by the Commission to implement clear and equitable standards to determine what cogeneration facilities qualify and to determine what portion of a qualifying cogenerator's gas usage should be billed at an incentive rate. This would result in simple, clear and consistent cogeneration regulations. Of the various utility cogeneration rate proposals, Mr. Danziger focused on PG&E's. He argued (1) PG&E's rate is based on a cogenerator's of electricity production which is not an adequate measure of overall system efficiency, (2) it discriminates against a cogenerator that uses natural gas and an alternate fuel source such as coal, and (3) whenever the utility's rate for gas is higher than the industrial customer's, the proposed rate loses its incentive completely.

Mr. Locke presented Kerr-McGee's rate proposal. He stated that the Commission has indicated that an energy efficient cogenerator should not have to pay more for gas than a less efficient utility, nor should a cogenerator have to pay as much for gas as an inefficient industrial customer. Further, he stated an incentive should not disappear whenever there is a fluctuation in prices that temporarily increases the utility's costs. He stated that cogenerators must be

assured that an incentive rate will exist whatever the fluctuations in the market. Without such certainty a cogenerator cannot make rational capital investments or other planning decisions and the original purpose of the cogeneration incentive rate is lost.

Mr. Locke described the operation of Kerr-McGee's cogeneration facilities which are designed to maximize overall plant efficiency through the sequential production of electrical/mechanical power and steam.

Mr. Stallings examined the impact of various proposed incentive rates on an industry's projected ROI, and determined that these effects were not extensive. Both smaller facilities and those with lower capacity factors had lower ROIs. In addition, he stated that the rate proposed by PG&E discriminates against steam turbine facilities. He also stated that an incentive rate would have minimal revenue impact on ratepayers. For example, a proposed gas incentive rate of 38 cents per therm would raise the average PG&E customer bill by 91 cents a month.

Kimberly-Clark

William M. Mazur testified for Kimberly-Clark. Mr. Mazur, a Kimberly-Clark engineering services manager, proposed that the Commission adopt a cogeneration incentive rate which is proportional to the plant's thermal efficiency. This rate would vary and depend on the thermal efficiency realized. He stated that the lowest price gas would be available to facilities who attain the highest thermal

efficiency. If the lowest price is set equal to the actual rolled-in utility cost of providing the natural gas when 100% thermal efficiency is realized by the cogenerator, there is significant incentive for customers to obtain maximum use of the energy. He urged that cogeneration not be defined to exclude possible opportunities for energy conservation and emphasized that capital investment decisions are influenced by energy costs.

Kimberly-Clark's position is that none of the other proposed rates offer sufficient incentive to make expanded cogeneration a reality.

California Manufacturers Association (CMA)

Robert Burt testified for CMA which supports a cogeneration gas rate similar to Kerr-McGee's, i.e., the rate would be 12% less than the applicable industrial rate or equal to the electric utility generation rate - whichever is lowest. CMA does not support, however, federal certification of cogeneration facilities because of the burden placed on the cogenerator.

University of California (University)

The University supports the need for a cogeneration gas incentive rate. In rejecting the staff's position, the University argues that the justification for a true incentive rate has already been established. Of the rate proposals introduced, the University prefers SoCal's proposal but states that if it were to be determined that a true incentive rate is not appropriate, a rate similar to PG&E's proposal should be adopted.

The University states that a cogeneration gas rate should not be conditioned on the the sale of the cogenerated electricity. It argues that whether the cogenerated electricity is sold to the utility or consumed internally by the cogenerator, the benefits to society and the gas and electric customers remain the same. It also states that public institutions such as the University do not enjoy the tax and depreciation incentives available to private entities.

City of San Diego (San Diego)

San Diego did not present any direct evidence but participated in the hearing and submitted a brief.

San Diego identified and addressed two issues: (1) Is a cogeneration gas rate necessary and/or desirable in order to promote cogeneration and (2) if such a gas rate is necessary, what rate would be in the best interests of the ratepayers and promote the growth of cogeneration.

San Diego states that it does not believe a special gas rate is necessary to make cogeneration economically feasible.

San Diego acknowledges that an incentive rate may be desirable, and agrees with the staff position that an incentive rate should not be implemented unless other incentives now available do not work. Further, it states that since no studies have been performed to determine what incentives will work, there should be no incentive at this time.

Discussion

In Decision No. 91239 we state:

"We agree that the intent of the Commission is not fully expressed in the findings and order in Decision No. 91109. It clearly was our intent that, initially at least, PG&E should establish a gas rate for industrial cogenerators at the level applicable to PG&E's own rate for gas used as boiler fuel as an incentive for new cogeneration facilities to be established. Such lower gas rate is intended to apply only to gas used in cogeneration operations, and is not intended to apply to other uses. It is also our intent that the provisions of Decision No. 91109 be implemented as soon as possible in order to facilitate the immediate construction of needed new cogeneration facilities. Therefore, we will amend Decision No. 91109 to provide that PG&E shall file a new Schedule G-55A as more specifically set forth in Appendix A, and that such new schedule shall become effective five days after filing. Appendix A (Schedule No. G-55-A) establishes a natural gas rate applicable to cogeneration uses which is on the same level as PG&E's rate for electrical generation boiler fuel (P-5) usage." 6/

This decision orders that:

"1. Decision No. 91109 is modified as follows:

6/ The record in OII No. 26 shows that within PG&E's service area there are 18 customers with existing cogeneration facilities (16 with boilers, 5 with hot exhaust gas). These customers probably are capable of burning natural gas. The record also shows that there are 12 potential projects involving cogeneration for the near future (including 4 oil field projects where natural gas is being considered as an alternative fuel due to Department of Energy policy on continued oil burning and air quality problems with other fuels).

"(a) The following finding is added:

"26. Until further order of the Commission, the establishment of an incentive gas rate for cogeneration usages on the same level as the Schedule No. G-55 rate applicable to gas used by PG&E for electrical generation will be consistent with the avoided cost pricing approach referred to in Finding 25 and will permit cogenerators and PG&E an equal rate for gas used to generate electricity.

"(b) Ordering Paragraph 13 is amended to read as follows:

"13. PG&E is authorized and directed to file the rate schedule attached to this order as Appendix A not later than February 1, 1980. The rate schedule shall become effective five days after filing. The schedule shall apply only to service rendered on and after the effective date thereof."

While Decisions Nos. 91109 and 91239 were directed at PG&E, the issue of a gas rate for cogenerators which is set equal to the utility electric generation rate is common to the other utilities and should be viewed in the context of overall Commission gas policy. The Commission recently completed a review of Southern California Gas Company's gas rate structure and issued Decision Nos. 92497 and 92498 (December 5, 1980). In these we continue our policy of referencing gas for most industrials and the electric utilities (Priorities 3, 4 and 5) to the cost of alternate fuel. The rate for electric utility generation (GN-5) is set at the same level (35.048 cents/therm) as for interruptible customers using #6 fuel oil (GN-36 and GN-46). The rate for interruptible customers referenced to #2 fuel oil (GN-32 and GN-42) is slightly higher (38.048 cents/therm).

The Commission is aware of fluctuations in alternative fuel prices based on fuel availability and resulting differences between utility purchases in the spot market and by long-term contract. While we continue to reference to alternative fuels, we seek to establish reasonable rate relationships on a continuing basis and recognize that if industrial customers take advantage of alternative fuels, additional gas will be available to lower priority customers (including Priority 5 customers for electric generation). We believe it is reasonable to price gas for cogeneration of electricity on a consistent basis with the price of gas for electric utility generation. Under this proposal, no additional economic incentive results when cogenerators substitute natural gas for #6 low sulfur oil, although some additional incentive (i.e., reduced price/therms) occurs when cogenerators use gas instead of #2 distillate fuel.

Setting the gas rate for cogeneration of electricity equal to that for utility generating plants is rational and consistent with avoided cost principles since the cogenerator's gas rate is at the same level the electric utility would have paid if it had consumed the gas. To the extent that the cogenerator displaces electric utility energy consumption, the avoided cost concept suggests that the cogenerator should get the benefit of that gas at the electric utility rate.

We believe that the PG&E proposal concerning the amount of gas qualifying for this rate should be adopted. PG&E argues that a cogeneration gas rate should apply to the lesser of two amounts:

- (1) the actual gas consumed by a cogenerator in the sequential production of electricity and steam, heat or useful work, or
- (2) the amount of gas an electric utility would consume to produce an incremental kWh; this is consistent with Decision No. 91239. If an electric utility requires .114 therms (11,400 Btu) to produce and transmit one incremental kWh, each kWh produced by a cogenerator displaces 11,400 Btus of fuel consumed in PG&E's central generating plants. This reduction in utility power plant consumption is the avoided energy cost. Thus the amount of a cogenerator's gas consumption eligible for the cogeneration gas rate in this instance should not exceed .114 therms for each net kWh produced by the cogeneration facility.^{7/} This ties the amount of gas qualifying for the cogeneration gas rate to the volume of gas a utility would have consumed to make the same kWh, and relates the energy savings achieved

^{7/} The net kWh is the cogenerator's gross output less the amount of electricity consumed to run the powerhouse making the electricity. Since PG&E's recommended standard of 11,400 Btu/kWh is the net incremental output of its fossil fuel generating plants, electricity consumed in the electricity manufacturing process is already included in the 11,400 Btu factor. Therefore the cogenerator's electric output used to determine the gas consumption qualifying for G-55A should be exclusive of powerhouse consumption.

to the fuel costs avoided by the utility generating plant. To the extent the cogenerator is more efficient than the electric utility, (i.e., requires fewer Btu to produce a kWh), industry receives an incentive to invest in equipment for the cogeneration of electricity. Moreover, the increased efficiency with which the fuel is used results in a net energy savings to society. In cases where the sequential production of electricity and steam, heat or useful work are produced by burning two or more fuels simultaneously, the cogenerated electricity should be allocated between such fuels on a Btu basis to reflect each fuel's pro rata responsibility for the electricity.

Some parties argue that the cogeneration gas rate proposals should be evaluated in terms of their impact on the potential cogenerator's return on investment. While it is the position of this Commission to actively encourage the development of cogeneration, it must do so in a way which is consistent with the interests of the ratepayers and the utilities. The intent of this order is to ensure that cogeneration facilities which are more thermally efficient than the utility pay no more for gas than the utility does for gas used to produce electricity. Due to a wide variety of economic and non-economic factors facing potential industrial and institutional cogenerators, the Commission feels that an evaluation of gas rate proposals based on their impact on return on investment is of limited value, unwarranted on the basis of the existing record, and contrary to efforts to accelerate the development of cost-effective cogeneration.

Some parties want the cogeneration gas rate applied to mechanical power. At this time the Commission feels that an application of the cogeneration gas rate to the sequential production of mechanical power and heat, steam or useful work would, in most instances, not result in the production of additional mechanical cogeneration nor provide additional sources of electrical capacity. Thus the cogeneration gas rate is to be applied to cogeneration which results in the sequential production of electricity and steam, heat or useful work. All cogeneration facilities which meet the federal efficiency standards of 18 CFR 292.205(a) and (b) and use natural gas sequentially in the production of electricity and steam, heat or useful work are eligible for the cogeneration gas rate.

The Commission in compliance with Assembly Bill 524 (1979) and as a result of hearings in Case No. 9642 (Decision No. 92704) has established a P-3A priority for cogenerators. This priority applies to that volume of gas used by cogenerators in the sequential production of electricity and steam, heat or useful work.

Findings of Fact

1. By Decision Nos. 91109 and 91239 this Commission determined that a gas rate for cogenerators is warranted. This would make natural gas available to cogenerators at a rate no greater than the utility pays for natural gas it uses to generate electricity.

2. Decision No. 91239 directed PG&E to file a proposed gas rate for cogeneration consistent with Decision No. 91109.

3. Because of protests to PG&E's tariff filing, the proposed tariff was treated as an application and set for evidentiary hearing.

4. By letter of the Executive Director, SoCal and SDG&E were directed to file applications for a cogeneration gas rate to be consolidated for hearing with PG&E's application.

5. Cogeneration is the sequential production of electricity and heat, steam or useful work from the same fuel source.

6. Cogeneration can contribute significantly to the efficient use of fuel in California by capturing and extracting useful work from energy that would otherwise be lost.

7. The fuel efficiency of cogeneration is due to its use of energy that would be lost if a central utility power plant were generating the electricity at its incremental heat rate.

8. For each kWh produced, cogeneration can save about 6,000 to 7,500 Btu of energy over the amount of energy that would be needed to separately generate the same kilowatt hours of electricity and raise the same amount of process steam. This reflects a significant energy savings for society.

9. Due to the wide range of factors facing different cogenerators, evaluation of possible returns on cogeneration investment is of limited value in evaluating cogeneration gas rate proposals and contrary to efforts to accelerate the development of cost-effective cogeneration.

10. Since more than one fuel can be burned simultaneously to create energy for sequential use in an electric cogeneration facility, the cogenerated electricity should be allocated between such fuels on a Btu basis to reflect each fuel's pro rata responsibility for the cogenerated energy.

11. It is reasonable to adopt a cogeneration gas rate which applies to the lesser of two amounts of gas: (1) the actual gas used by the cogenerator in the sequential production of electricity and steam, heat or useful work, or (2) amount of gas the local electric utility would consume to produce and transmit the same net kilowatt hour, based on the utility's average annual incremental heat rate and reasonable transmission losses.

12. Given this Commission's interest in encouraging the efficient use of gas in the cogeneration of electricity as well as the development of additional sources of electrical capacity, the cogeneration gas rate at this time is to apply to the sequential production of electricity and steam, heat or useful work.

13. It is reasonable that the cogeneration gas rate should apply to that natural gas which is used sequentially in the production of electricity and steam, heat or useful work and those cogeneration facilities which meet minimum efficiency standards as detailed in 18 CFR 292.205(a) and (b).

14. If a natural gas rate for cogenerators were not adopted, an energy efficient cogeneration facility might pay more for gas than a less thermally efficient utility plant.

15. It is reasonable to set the gas rate for generation of electricity by cogenerators equal to the rate at which the local electric utility's central generating plants purchase natural gas or the otherwise applicable industrial/commercial rate, whichever is lower.

16. By Decision No. 92704 (February 18, 1981) in Case No. 9462 we adopted a P-3A priority for cogeneration facilities and said we would describe which cogeneration volumes would qualify for higher priorities. It is reasonable that all natural gas used by cogenerators in the sequential production of electricity and steam, heat or useful work should qualify for higher priorities.

Conclusions of Law

1. A natural gas rate for cogenerators will provide significant encouragement to the further development of cogeneration.

2. A natural gas rate for cogenerators is consistent with Decision No. 91109 as modified by Decision No. 91239, wherein the Commission argued that a natural gas rate for cogenerators is warranted and should make natural gas available to cogenerators at the same rate the electric utility pays for natural gas to produce electricity.

3. A natural gas rate for cogenerators is reasonable, in the best interest of all ratepayers, and consistent with Commission policy.

4. PG&E, SoCal, and SDG&E should file a rate schedule consistent with avoided cost principles as set forth in this decision.

O R D E R

IT IS ORDERED that Pacific Gas and Electric Company, Southern California Gas Company and San Diego Gas & Electric Company shall file within 15 days the following:

1. A natural gas rate tariff for electrical generation by cogenerators consistent with avoided cost principles and Decisions Nos. 91109 and 91239.

2. This tariff shall be equal to the rate at which the electric utility buys natural gas to generate electricity or the applicable industrial/commercial rate, whichever is lower.

3. This rate shall apply to that amount of natural gas which the electric utility in that service territory would require to generate an equivalent amount of electricity, but it shall not apply to more than the total amount of gas used by the cogenerator in the sequential production of electricity and steam, heat, or useful work.

4. To be eligible for Priority 3A and the cogeneration gas rate the cogeneration facility must meet the efficiency standards as outlined in 18 CFR 292.205(a) and (b) as well as use natural gas sequentially in the production of electricity and steam, heat or useful work.

5. All natural gas used sequentially by cogenerators in the production of electricity and steam, heat or useful work is eligible for priority P-3A.

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

Dated MAR 17 1981, at San Francisco, California.

*I dissent:
see attached.
Richard D. Howell*

John E. Guy

President
Thomas J. ...

Victor ...

Commissioners

A. 59459, et al.

D. 92792

RICHARD D. GRAVELLE, Commissioner, Dissenting:

I cannot sign the majority opinion for five reasons.

First: There is no demonstration that the special gas rate granted today is necessary as a means of encouraging more cogeneration. We have given cogenerators a wealth of incentives. We have guaranteed cogenerators that they will be able to sell power to the utilities at avoided cost prices. We have given cogenerators the highest priority for service among interruptible customers. Congress has given cogenerators special tax incentives and it is reasonable to assume that Congress will add to those incentives. Under these circumstances, I am not persuaded, and the record does not reflect, that yet another incentive is necessary.

Second: The fact that some industrial customers will have reduced gas bills means that other customers will have increased gas bills. We do not know the extent of the increase, but to those paying the increased bills the amount may well be critical. Whether the cost of the program will remain fixed, will decrease or will increase is a matter for speculation alone, since we do not know how much gas-supported cogeneration will occur as a result of the majority opinion.

Third: The special gas rate granted today is extended not just to new cogenerators but also to existing cogenerators. Thus it is impossible to defend the preference granted to one set of industrial customers as a true incentive or experimental rate. In the solar water heater (OIR 42) and ZIP cases, the Commission did not reward those who had already undertaken conservation measures by including them among those eligible for rebates or low-cost financing. By the same token, we should not reward here those cogenerators who obviously had reasons sufficient to themselves to begin cogeneration many years ago. Those parties have reaped the benefits of cogeneration for quite some time. They need no incentive now.

Fourth: Although the majority opinion does not address the issue, it seems clear to me that a preferential rate prohibited

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under California Public Utilities Code Section 453 is being granted by today's decision. Some industrial customers, for reasons intricately connected to the manufacturing processes they employ, simply cannot become cogenerators. Others can cogenerate because their processes are adaptable to cogeneration. The majority opinion suggests that, because the special gas rate is limited to the amount of gas required for producing the amount of electricity cogenerated, there is no preferential rate problem, on the theory that there will simply be one rate for all producers of electricity. However, the majority opinion overlooks the fact that the gas used for cogeneration is also being used for the manufacturer's industrial process. In this sense, the cogenerator reaps a benefit not available to other industrial customers. Further, it must be pointed out that industrial customers who cogenerate differ significantly from the utilities and thus should not be lumped together with them as if all electricity producers were identical. The utilities contract for gas volumes far in excess of their individual customers. Their large volume purchases come at a discounted price. I see no reason why industrial customers who do not purchase gas in equivalent volumes should be granted special rates because they cogenerate, while those industrial customers who do not cogenerate must pay more for the same volume of gas.

Fifth: The subsidy provided by the majority decision is provided by the gas customer for the ultimate benefit of the electric customer. While there may be a benefit to society resulting from this cross-subsidy, I do not believe we have adequately examined other means of reaching the desired result while

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constraining the provision of incentive to a single type of customer.

I see this proceeding as an experiment directed toward attracting a potential new source of power, but commenced without adequately addressing the necessity, cost or preferential rate problems of the special price being given to cogenerators. As is the majority, I am anxious to see more cogeneration brought on line. But, I cannot accept this experiment when no justification has been presented for it. Accordingly, I dissent.


RICHARD D. GRAVELLE, Commissioner

dl
San Francisco, California
March 17, 1980