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Decision 90 05 029 MAY 4 1990

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of PACIFIC GAS AND ELECTRIC COMPANY for Authority to Adjust its Electric Rates Effective November 1, 1989; and for Commission Order Finding that PG&E's Gas and Electric Operations during the Reasonableness Review Period from February 1, 1988, to December 31, 1988, were Prudent. (U 39 M)	Application 89-04-001 (Filed April 3, 1989)

(See Appendix A for appearances.)

O P I N I O N

Pacific Gas and Electric Company's (PG&E) electric and gas energy costs under its Electric Cost Adjustment Clause (ECAC) and its Annual Cost Adjustment Proceedings (ACAP) are subject to an annual reasonableness review. On January 27, 1989, the Commission in Decision (D.) 89-01-040 adopted new schedules for processing rate proceedings. Under the new schedule, PG&E's reasonableness review record period which is being considered in this filing covers the 11-month period from February 1, 1988 through December 31, 1988. For all subsequent years, PG&E's annual record review period will cover the 12-month period commencing on January 1 and ending on December 31.

In D.89-12-015 in this application we determined PG&E's ECAC revenue requirement for the forecast period November 9, 1989 to October 31, 1990. In this decision we determine the reasonableness of PG&E's electric and gas systems management policies and actions during the review period.

The Commission allows energy utilities to recover fuel and related costs through offset proceedings - the ACAP for gas

utilities and the ECAC for electric utilities. The offset treatment of fuel costs shields the utility from fluctuations in fuel costs, some of which are beyond the utility's control; however, it also undermines the utility's incentive to operate its system efficiently and to minimize those expenses over which it does exercise some control. To replace that incentive, the Commission relies, in part, on reasonableness reviews to determine whether or not the utility's fuel purchases and operations were prudent and to disallow recovery from the utility's ratepayers of any imprudent expenditures.

DRA has reviewed PG&E's application and investigated its operations during the record period. Members of the Fuels Branch and the Energy Resources Branch participated in that investigation. In addition to the operational investigation, members of DRA's Energy Auditing Branch conducted a financial audit of PG&E.

During its financial audit of PG&E, DRA found no substantial accounting errors or discrepancies. PG&E cooperated fully with the audit. DRA specifically commends PG&E for its efforts to improve the accounting of fuel oil inventory. DRA's investigation of PG&E's gas and electric operations led it to conclude that during the reasonableness review period PG&E operated its system in a prudent manner for the benefit of its ratepayers. DRA did not consider the geothermal issues which the Commission has deferred to the 1990 ECAC proceeding.

To protect PG&E's ratepayers, and to improve and facilitate subsequent DRA reasonableness investigations, DRA made the following recommendations.

DRA Recommendations

1. That the Commission direct PG&E to establish and maintain certain deferred accounts pending the Commission's approval of Department of Energy (DOE) refunds. PG&E agrees.

2. That the Commission direct PG&E to establish and maintain a framework for gas

supply planning, and present its plan in the 1990 ACAP proceeding. PG&E agrees.

3. That the Commission direct PG&E to provide gas-system transmission and deliverability information for use in subsequent reasonableness investigations. PG&E agrees.

4. That the Commission update the Heat-Rate-Deviation-from-Theoretical standard from 400 Btu/kWh to 350 Btu/kWh to reflect current plant performance, and that the Commission review that standard every three years. PG&E disagrees.

5. That the Commission direct PG&E to prepare and submit with its 1990 ECAC application a study of the use of its dispatch center in optimizing purchased power operations. PG&E agrees to respond to data requests of DRA.

6. That PG&E reexamine its steam curtailment records for the Geysers Power Plant and provide DRA with the proper amount of curtailments in the next quarterly steam curtailment report. PG&E agrees.

7. That the Commission direct PG&E to submit, in subsequent reasonableness reports, a more complete justification of its actions and decisions regarding the administration of contracts with qualifying facilities. Exhibit 105, which consists of two letters between DRA and PG&E, sets forth the terms of their agreement on this issue.

8. That a reasonableness finding on gas matters, specifically Chapters 4 and 5 of Exhibit 102, be deferred and considered in PG&E's 1990 test year reasonableness review. PG&E agrees.

Heat Rate

The method used to determine the reasonableness of PG&E's conventional steam plant performance is to use a measurement called the "heat rate deviation from theoretical" method, which measures

how far from theoretical PG&E's plants are operating. The heat rate deviation from theoretical provides an index which can monitor performance of fossil generation and form a basis for gauging reasonableness of operations since it accounts for performance variations inherent with different loadings of the individual units.

The heat rate deviation from theoretical method is calculated by taking the difference between the fossil plants' actual recorded system average heat rate[1] during the record period and the theoretical system average heat rate derived from test heat rate curves[2] for the units' actual loading levels during the record period. This deviation between the actual and theoretical system average heat rate should be kept within a given bandwidth in order for PG&E's fossil plant operations to be considered reasonable. In D.86-01-030, we established the bandwidth at 400 Btu/kWh. The following table shows a seven-year history of heat rate deviations for PG&E's power plants.

PG&E History of Heat Rate Deviations
1982-1988

Year	Heat Rate Deviation
1982	378
1983	395
1984	370
1985	344
1986	302
1987	282
1988	236

1 Heat rate is a measurement of the thermal energy required to produce electrical energy by a power plant. It is measured in British Thermal units (Btu) - the heat content of the fuel - per kilowatt-hour (kWh) - the amount of electricity produced.

2 High accuracy input/output (I/O) tests are performed on each of PG&E's conventional fossil units after major overhauls or every two years.

The actual system average heat rate is the total fuel actually consumed by conventional fossil units, in Btu, divided by the total net generation, in kWh, delivered to the electric system by these units. The theoretical system average heat rate is the summation of theoretical production fuel consumed determined from unit I/O curves and service fuel consumed by all conventional fossil units divided by the total net generation delivered to the electric system by these units.

DRA has reviewed several years of PG&E's recorded heat rate deviations and concludes that from 1982 through 1988 there is a definite trend toward a decrease. DRA believes that this deviation is in the process of settling out at some level. Until this level is reached, DRA recommends that the current benchmark be reviewed every three years to capture the most recent trend of heat rate deviations in PG&E's fossil plants. However, once this level is finally reached, DRA recommends that the current benchmark methodology be revisited.

DRA asserts that the present 400 Btu/kWh benchmark does not provide a realistic measure against PG&E's actual system, nor does it provide a true incentive for PG&E to improve its heat rate. Looking at the above table, DRA observes that 400 Btu/kWh is virtually out of reach from recorded actual deviations. DRA contends that it is senseless to continue using the current benchnark because recent deviations have only a tenuous relationship to the benchmark. In support of its recommendation DRA cites PG&E's "Report of Pacific Gas and Electric Company on the Performance of PGandE's Fossil Fuel Steam Plant Operations," filed in A.85-04-019 which discusses the heat rate deviation: "PGandE believes that a three-year period should be used to test the measure. After that period, the measure should be evaluated to determine how well it has served its purposes and what improvements can be made."

DRA notes that the 400 Btu/kWh benchmark was based upon an average of heat rate deviations from 1982 through 1984. DRA proposes that the benchmark be updated by using the same methodology presented in D.86-01-030 with the inclusion of the most current heat rate deviation data from the years 1985 through 1988 and elimination of the oldest three years of data years 1982 through 1984. DRA believes that its recommendation to update the benchmark is appropriate since it is based on more recent fossil plant performance data. Incorporating DRA's recommendation yields a new benchmark or bandwidth of 350 Btu/kWh.

For this record period, the actual system average heat rate, adjusted for 100% gas burns, was 10,170 Btu/kWh. The theoretical system average heat rate was 9,933 Btu/kWh. The heat rate deviation, or difference between actual and theoretical heat rate, was 236 Btu/kWh. This deviation is considered reasonable since it is well within DRA's recommended 350 Btu/kWh bandwidth.

PG&E argues that the benchmark should not be modified at this time. It asserts that the decision which adopted the measure also established the criteria by which the effectiveness of the measure can be determined. These criteria are: (1) accurate measurement of efficiency of operations under a wide variety of operating conditions, and (2) that the measure not operate as an incentive to produce more than the minimum amount of fossil generation required by system economics (D.86-01-030, pp. 4-5). While operating conditions are different now than prior to 1982, PG&E believes that both of these criteria are being effectively met, and that it is neither necessary nor desirable to change the yardstick at this time.

PG&E contends that the heat rate deviation has steadily decreased because of a number of its aggressive programs. These programs include implementation of performance monitoring systems at a number of plants, installation of new plant instrumentation and control systems, and improved testing and analytical procedures

which have enhanced its ability to use performance test data to diagnose, and thus correct, causes of performance degradations.

However, a number of extraneous factors over which PG&E has little control could adversely affect the heat rate deviation. A return to significant oil burns could affect the heat rate deviation. Likewise, a wet hydro year, with dramatically increased cycling of the fossil plants, could also affect the deviation. Pending legislation, such as the proposed amendments to the federal Clean Air Act, may require PG&E to change the way it runs its fossil plants, thereby affecting in some unknown way the heat rate deviation. By updating the standard to reflect only the last few years of relatively steady performance, during which PG&E almost exclusively burned natural gas, may leave PG&E unfairly vulnerable during years of change.

PG&E has maintained and improved performance when cost effective because it is good business, not because the heat rate deviation yardstick exists. Reducing the heat rate reduces fuel consumption and, therefore, fuel costs. Reduced fuel consumption means lower emissions and a cleaner environment. Further, actions taken to improve heat rate generally help to maintain unit capability which, in turn, helps maintain unit and system reliability and defer the need to add new resources. The measure merely provides a means by which we can monitor and gauge PG&E's performance. Tightening the benchmark in response to PG&E's efforts would be sending a negative regulatory message to utilities, according to PG&E. If the Commission sends a message that superior efforts will result in a tightening of one of the indicators of reasonableness, that could act as a disincentive to do much more than meet the minimum standards.

We believe that DRA's position is well taken, and we will adopt DRA's recommended heat rate deviation. PG&E, at the time the heat rate deviation was originally adopted, recognized that it would be modified. At that time, PG&E stated: "As experience is

gained in its use it may be necessary for the Commission and PG&E to consider appropriate modifications. Initially, PG&E believes that a three-year period should be used to test the measure. After that period, the measure should be evaluated to determine how well it has served its purpose and what improvements can be made." The Commission, in our original decision on this issue, said that "We agree with staff that adoption of a 400 Btu/kWh deviation band is reasonable since it is based on the more recent data." A benchmark is a standard or point of reference in measuring quality or performance. An obsolete standard has no meaning in current practice nor does a standard far removed from current performance. When the 400 standard was adopted the three-year average heat rate deviation (1983-84-85) was 370; the most recent three-year average (1986-87-88) is 275. A reduction of 50 Btu/kWh in the heat rate deviation standard is reasonable as it will keep a sensible spread between actual performance and theoretical performance.

Findings of Fact

1. For the period February 1, 1988 through December 31, 1988, except as noted in Finding of Fact 2, PG&E operated its system in a prudent manner for the benefit of its ratepayers.

2. The reasonableness finding on gas matters for the period February 1, 1988 through December 31, 1988, specifically Chapters 6 and 7 of Exhibit 55 and Chapters 4 and 5 of Exhibit 102, shall be considered in PG&E's 1990 test year reasonableness review.

3. The heat rate deviation from theoretical standard shall be modified from 400 Btu/kWh to 350 Btu/kWh and shall be reviewed in three years.

Conclusions of Law

PG&E shall modify its practice in the manner set forth in the following order.

O R D E R

IT IS ORDERED that Pacific Gas and Electric shall:

1. Establish and maintain deferred accounts recommended by the Division of Ratepayer Advocates (DRA) pending this Commission's approval of Department of Energy refunds.

2. Establish and maintain a framework for gas supply planning and present its plan in its 1990 ACAP proceeding.

3. Provide gas system transmission and deliverability information to DRA for use in subsequent reasonableness investigations.

4. Use 350 Btu/kWh as its heat rate deviation standard.

5. Respond to DRA data requests regarding a study of the use of its dispatch center in optimizing purchased power operations.

6. Reexamine its steam curtailment records for the Geysers Power Plant and provide DRA with the proper amount of curtailments in its next quantity steam curtailment report.

7. Submit in its reasonableness reports a more complete justification of its actions and decisions regarding the administration of contracts with qualifying facilities, in conformity with Exhibit 105.

This order is effective today.

Dated MAY 4 1990, at San Francisco, California.

G. MITCHELL WILK
President
FREDERICK R. DUDA
STANLEY W. HULETT
JOHN B. OHANIAN
PATRICIA M. ECKERT
Commissioners

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

NEAL J. SHULMAN, Executive Director

List of Appearances

Applicant: Robert B. McLennan, Attorney at Law, for Pacific Gas and Electric Company.

Interested Parties: C. Hayden Ames, Attorney at Law, for Chickering & Gregory; Jackson, Tufts, Cole & Black, by William H. Booth and Joseph S. Faber, Attorneys at Law, for California Large Energy Consumers Association; Morrison & Foerster, by Jerry R. Bloom, Attorney at Law, for California Cogeneration Council; Matthew V. Brady, for California Department of General Services; David Branchcomb, for Henwood Energy Services, Inc.; McCracken, Byers & Martin, by David J. Byers, Attorney at Law, for California City-County Street Light Association; Brobeck, Phleger & Harrison, by Gordon E. Davis, Attorney at Law, for California Manufacturers Association; Karen Edson, for KKE & Associates; Michel P. Florio and Joel R. Singer, Attorneys at Law, for Toward Utility Rate Normalization (TURN); Norman Furuta, Attorney at Law, for Federal Executive Agencies; Steven Geringer, Attorney at Law, for California Farm Bureau Federation; Dian M. Grueneich, Attorney at Law, for California Department of General Services; Hanna & Morton, by Douglas K. Kerner, Attorney at Law, for Santa Fe Geothermal, Inc., Unocal Corporation, Freeport-McMoRan Resource Partners; Joseph G. Meyer, for Joseph Meyer Associates; Jeff Nahigian, for JBS Energy Inc.; John D. Quinley, for Cogeneration Service Bureau; Kathi Robertson, for Simpson Paper Company; Chester/Schmidt Consultants, by Reed V. Schmidt, for County of Marin and City of Bakersfield; Jan Smutny-Jones, Attorney at Law, for Independent Energy Producers; Downey, Brand, Seymour & Rohwer, by Philip A. Stohr, Attorney at Law, for Industrial Users; Nancy Thompson, for Barakat, Howard & Chamberlain; John Vickland, Attorney at Law, by Alice Loo, for Bay Area Rapid Transit; Philip J. DiVirgilio, for PSE Inc.; Robert B. Weisenmiller, for Morse, Richard, Weisenmiller & Associates, Inc.; Don Salow, for Association of California Water Agencies; Armour, St. John, Wilcox, Goodin & Schlotz, by James D. Squeri, Attorney at Law, for Kelco Division of Merck; Richard O. Baish, Michael D. Ferguson, and Randolph L. Wu, Attorneys at Law, by Phyllis Huckabee, for El Paso Natural Gas Company; Hanna & Morton, by Douglas K. Kerner, Attorney at Law, for Geothermal Resources Association and Independent Energy Producers Association; Thomas P. Corr, Attorney at Law, for Independent Power Corporation; Wayne Meeks, for Simpson Paper/Investment Company; Selby Mohr, for Sacramento Municipal Utility District;

Thomas R. Sparks and Michael L. McQueen, Attorney at Law, for Unocal Geothermal; Harry Winters, for Regents, University of California; and Debie Boom, for Martin Katz, Sierra Energy & Risk Assessment, Inc.

Division of Ratepayer Advocates: Catherine Johnson, Attorney at Law, James Barnes, and Geoffrey Meloche.

Commission Advisory and Compliance Division: Ali Miremadi.

(END OF APPENDIX A)