

ORIGINAL

Decision No. 87576

July 12, 1977

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Investigation on the Commission's own  
motion into possible electrical supply  
shortages of electric public utilities  
resulting from 1976-77 drought  
conditions and emergency measures to  
provide for necessary mutual  
assistance.

Case No. 10292  
(Filed March 22, 1977)

(See Appendix A for appearances.)

O P I N I O N

On March 22, 1977 this Commission issued an Order Instituting Investigation (OII) in Case No. 10292 into the adequacy and reliability of the energy and fuel requirements and supplies of electric corporations because of possible electrical supply shortages resulting from the 1976-77 drought conditions.

The respondents were Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDG&E), and Southern California Gas Company (SCG).

SCG was made a respondent since it may be necessary to direct SCG to transport and/or buy natural gas from PG&E and sell it to a customer in the south. Los Angeles Department of Water and Power (LADWP) and Sacramento Municipal Utility District (SMUD) were invited to participate as interested parties.

It was recognized that the drought has adversely affected hydroelectric generating conditions, particularly in northern California. It was also recognized that mutual assistance between the major electric utilities as well as a strong conservation effort would be necessary to relieve the shortage.

Because electric generation facilities located in southern California are to be operated with increased quantities of fuel in order to render assistance to hydro-short PG&E during some months of 1977, the investigation explored whether it was in the public interest to direct PG&E either to transfer fuel in the form of natural gas to southern California electric systems so as to reduce any possible adverse air pollution impact in southern California because of increased oil burning, or to direct PG&E to purchase electricity without any fuel transfer.

Ten days of public hearings were held before Administrative Law Judge John J. Doran between April 11, 1977 and May 26, 1977, with the matter submitted on briefs filed June 8, 1977.

In Decision No. 87241 in Case No. 9581 dated April 26, 1977 the Commission called for all customers of regulated electric utilities in California to reduce electric consumption substantially below the amount consumed in 1976. The call for voluntary conservation was made because the State faces a potential energy shortage during the summer season due to the abnormally dry winters of the last two years which have created a shortage of hydroelectric generation in California and in the Pacific Northwest.

PG&E, in a press release dated June 13, 1977, announced that it had arranged to obtain some additional energy from other utilities in the west for assistance this summer when the drought-caused electric situation would become tighter. It stated that the major electric supplement would come from SCE and SDG&E.

PG&E further stated that it has an emergency plan to go into effect if electricity runs short, including calls to major customers and the public-at-large for massive voluntary conservation efforts on an emergency basis. A final step of rotating interruptions to customers of from two to four hours duration on an area or block basis throughout the utility's service territory could become necessary if the other measures are not effective.

Respondents PG&E, SCE, and SDG&E as well as LADWP and the Commission staff presented evidence in response to the Commission's investigation. There appears to be no significant disagreement on the basic facts, which are hereinafter summarized.

The 1976-77 water year is by far the most adverse of record and immediately follows the second most adverse water year. This extremely adverse water situation, coinciding with delays in the federal licensing of the Diablo Canyon nuclear unit and a drought in the Pacific Northwest, has affected PG&E's electric system with particular severity. However, by a combination of measures, including operation of its thermal plants at very high capacity and the purchase of electric energy from other utilities, including southern California utilities, PG&E hopes to have electrical energy adequate to meet all demands of its customers in 1977.

Prior to this current two-year drought, 1930-31 represented one of the most adverse water year. Precipitation in 1930-31 was about 60 percent of normal. Year 1975-76 was slightly more adverse than 1930-31. Year 1977 in conjunction with 1976, however, has developed as substantially more adverse than 1930-31. In 1976-77 precipitation is expected to be about only 30 percent of normal, resulting in the most adverse hydrogeneration year in PG&E's history.

The PG&E area ordinarily receives about 40 percent of its electric energy from hydrogeneration, a higher percentage than other California utilities. The drought has, therefore, affected PG&E's electric system with particular severity: normal hydrogeneration of about 24 billion kwh will be reduced to about 10 billion kwh in 1977. This is substantially less hydrogeneration than even that which would be expected under either 1930-31 adverse conditions (17 billion kwh) or 1975-76 conditions (16 billion kwh). The Pacific Northwest drought reduced hydroelectric energy usually supplied by that region, and which was available in large quantities in 1975-76.

PG&E has taken a number of steps in response to this reduced hydroelectric availability, including high-level use of the thermal generating plants within northern California; purchases of electric energy from other utilities (both within and outside of California); rescheduled plant maintenance; voltage reduction; conservation; and preparation of curtailment contingency plans.

The electric supply situation for the State and for each of the four largest California electric utilities is shown in the tables included herein. The data were contained in the May 11, 1977 Combined Response of California Electric Utilities filed with the Energy Resources Conservation and Development Commission in Docket No. 77-EA-1, and submitted as evidence in this proceeding.

PG&E's operating plan for the remainder of the year assumes it will be able to operate its conventional thermal power plants at an 85 percent operating capacity. For the first five months of this year, assuming 400 megawatts of forced outage and scheduled maintenance, PG&E attained an average operating capacity of about 90 percent. Based upon those results and upon PG&E's taking advantage of hydropower from the Pacific Northwest in late April - early May 1977, which allowed it to overhaul its Moss Landing 6 unit, it appears that PG&E should be able to continue to operate its conventional thermal power plants at an 85 percent operating capacity.

PG&E is banking all energy that does not fit under its load curve with the Bonneville Power Administration. By May 9, PG&E had banked about 701 million kwh of electricity. This energy will be available to PG&E during 1977.

In addition to operating its thermal plants at high operating capacities, PG&E expects to purchase electrical energy from SCE, SDG&E, and LADWP. For the months of January through May, PG&E purchased 1,540 gigawatt-hours from those utilities. Assuming it

can attain an 85 percent operating capacity for the remainder of the year, PG&E estimates it will need to purchase an additional 582 gigawatt-hours from those utilities from June through September. No purchases during this period would have to be made should PG&E be able to attain a 90 percent operating capacity for each of these months as shown in the staff estimates. For the period June through September, SCE is to produce 63 percent of the purchased power, LADWP is to produce 26 percent, and SDG&E is to produce 11 percent. This division is based upon a study of the respective customer loads for each of those entities.

For the months of July, August, and September, PG&E has approached SCE, LADWP, and SDG&E about purchasing capacity which they have for sale. PG&E intends to attain a 7.5 percent capacity margin. The California Power Pool Agreement requirement is 7 percent.

In order to generate the electricity required by PG&E, the southern utilities will have to burn about 936,000 equivalent barrels of fuel oil over and above their own requirements during June through September 1977. Each of the utilities have testified that they expect to be able to obtain this additional fuel to supply PG&E's requirement.

LADWP related that it will purchase the necessary fuel as soon as a firm agreement between itself and PG&E has been reached. Due to limited storage capacity, it did not want to commit itself to additional purchases until it was certain the purchased fuel would be used to generate electricity.

Respondents and interested parties submitted to staff counsel a list of those portions of the record in CPUC Case No. 9642<sup>1/</sup> they felt should be incorporated by reference into this record so as to avoid relitigation of the same issues. In this regard, the parties and staff counsel entered into a stipulation providing that nothing contained in the testimony or exhibits or in those items designated from the record in Case No. 9642 for incorporation in this proceeding raises or discusses or shall be deemed to raise or discuss: (1) the possible health effect of various air emissions; or (2) the nature or rate, if any, of formation or the significance, if any, of alleged secondary pollutants such as sulfates. The stipulation is recognized and accepted by the Commission.

Table 1 shows two cases of generating PG&E's energy deficiency as presented by the South Coast Air Quality Management District. Both cases assumed that 89 percent of the energy will be generated in the South Coast Air Quality Management District. Case 1 assumes generation by fuel oil and Case 2 assumes the use of natural gas and LADWP's Scattergood 3 Power Plant. Case 2 also shows the additional natural gas necessary to offset the increase NO<sub>x</sub> emissions. The total gas under this plan approximates the total gas necessary to generate 100 percent of PG&E's energy deficiency.

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<sup>1/</sup> Petition of Air Resources Board seeking interim relief on an emergency basis, filed June 21, 1976.

TABLE 1

Comparison of Two Cases of  
Generating PG&E's Energy Deficiency  
Summer of 1977 Estimated

Month	Energy for PG&E by LADWP & SCE gwh	Case I			Case II <sup>1/</sup>					
		63% of Energy Generated by SCE; 26% by LADWP; Using Fuel Oil			284 Mw/Hr Max. Rate of Energy Generated by LADWP Scattergood 3; Balance by SCE; Using Natural Gas; Supplying Additional Gas to Offset NO <sub>x</sub> Emissions					
		Oil	NO <sub>x</sub>	SO <sub>2</sub>	Gas to Generate	Gas to Offset				
		kbbls	tons	tons	Energy Deficiency	NO <sub>x</sub> Emissions	Total Gas			
		kbbls	tons	tons	kbbls	MMcfd	kbbls	MMcfd	kbbls	MMcfd
June	117	184	186	187	191	37	33	6	224	43
July	134	205	266	209	219	41	38	7	257	48
Aug.	71	115	138	116	116	22	20	4	136	26
Sept.	196	297	357	230	321	62	56	11	377	73

<sup>1/</sup> Reduces SO<sub>2</sub> emissions by months June to September as follows:

212, 238, 131, and 273 tons, respectively. Reduces NO<sub>x</sub> emissions by quantities shown in NO<sub>x</sub> column of Case I. NO<sub>x</sub> emission rate of Scattergood 3 Power Plant is .18<sup>x</sup> pound per equivalent barrel.

Any transfer of natural gas to the south will require additional oil to be burned in the north, most likely at the Moss Landing and Morro Bay Power Plants. It is estimated that power plant emissions created by the oil to offset only the gas required to generate the electric energy deficiency would increase in Monterey and San Luis Obispo Counties during the summer of 1977 as follows: 8.6 percent in  $\text{NO}_x$ , 22.5 percent in  $\text{SO}_x$ , and 14.6 percent in particulates.

The LADWP stated that the use and availability of Scattergood 3 Power Plant would enhance the reliability of both LADWP and California. On this basis, natural gas will be made available during the summer of 1977 to operate the idle Scattergood 3 Power Plant. This will provide more cushion if the load estimates are too low or if there are increased generation-forced outages.

The Air Resources Board, the South Coast Air Quality Management District, and the Commission staff took the position that natural gas should be transferred south in sufficient quantities to offset the  $\text{NO}_x$  emission increases brought about by the additional electric generation. PG&E opposed such transfer and the other parties did not take a position on the gas transfer.

The California Gas Producers Association said increased California production could be made available to the south. However, PG&E data showed that such gas could not flow into its southern system for delivery to either SCG or to the Moss Landing or Morro Bay Power Plants. The southern California utilities and the staff took the position that the costs of the gas transfer should be borne by PG&E. SCG sought authorization to permit it to furnish Priority 5 natural gas when it was curtailing Priority 4 customers. PG&E sought a determination of whether or not the proceeding involves a project under the California Environmental Quality Act and whether or not



an environmental impact report would be required before natural gas could be transferred. They also made a motion to dismiss the portion of the proceeding related to the gas transfer, stating it was not within our jurisdiction.

PG&E opposed bearing the costs of a gas transfer for air quality or emission purposes. TURN agreed with PG&E and the other parties took no position on bearing costs.

PG&E and SCG are concerned that a natural gas transfer might result in a loss of gas to California under the El Paso Natural Gas Company curtailment plan. The order hereinafter provides only for a transfer of gas within California and should not result in any reduction in supply. A copy of this order is being furnished to the Federal Power Commission.

Actual and projected purchases of electric energy to meet the northern California energy deficiency are being made under the California Power Pool Agreement filed with the Federal Power Commission or under a similar agreement. The Power Pool Agreement provides that the fuel component of the electric energy price is the seller's incremental cost of fuel. The purchase price of transferred gas would be used in calculating the fuel component of the price of the energy sold to PG&E.

Sales and transportation of natural gas that are made as a result of this proceeding are under the jurisdiction of this Commission and may be sold at a price that is no more than the incremental cost of fuel for PG&E's electric generation.

Increased electric fuel costs incurred as a result of the gas transfer are appropriate to recover under energy cost adjustment clauses.

The evaluation of the evidence in this proceeding together with consideration of the position of the parties is summarized in the following findings of fact.

Findings of Fact

1. The 1976-77 hydro year is the most adverse year of record for California.

2. The unprecedented drought of 1976 and 1977 in northern California coupled with a dry year in the Pacific Northwest has adversely affected hydroelectric generation conditions in the service areas of PG&E.

3. PG&E does not have sufficient electric energy to meet the foreseeable requirements of its customers for June, July, August, and September 1977. Estimated energy shortfalls for these months are 582 gigawatt-hours.

4. PG&E does not have sufficient capacity to provide a 7.5 percent minimum reserve margin over forecasted peak demands for July, August, and September 1977. The estimated deficiencies in reserves during these months are 400, 500, and 200 megawatts, respectively.

5. Because of the adverse 1976-77 hydro year, combined with delays in the federal licensing of the Diablo Canyon nuclear plant, adverse hydro conditions in the Pacific Northwest in 1976-77, and adverse hydro conditions in California in 1975-76, PG&E will purchase electric energy and capacity from other utilities both within and outside of California to meet the demands of its customers.

6. PG&E has taken reasonable measures to deal with the decreased hydroelectric availability in addition to the purchase of energy from other utilities. Such measures include operation of its conventional thermal power plants at very high capacity factors, maximum practicable use of other generating facilities in its service area, deferred planned maintenance where possible, voltage reduction, encouraging further customer conservation, and preparation of curtailment contingency plans.

7. The cooperation of utility customers in conserving electric energy is absolutely necessary, particularly during this period of reduced hydroelectric availability.

8. PG&E, SCE, LADWP, and SDG&E are interconnected with each other and with numerous utilities and sources of electric energy in other states from which they regularly receive substantial amounts of electric energy.

9. PG&E, SCE, LADWP, and SDG&E will have sufficient capacity and energy, either from their own resources or through purchases from other sources, to meet all projected demands within California in 1977.

10. Between January and May 1977 SCE, LADWP, and SDG&E have generated approximately 1,540 gigawatt-hours of electricity for PG&E.

11. Approximately 73 percent of the 1977 northern California energy shortfall projected to be supplied by southern California has been supplied prior to June 1.

12. It is estimated that 518 gigawatt-hours of the PG&E electric shortfall will be met by generation by SCE and/or LADWP within the South Coast Air Basin during the period of June through September 1977.

13. If fuel oil is burned to generate the estimated 518 gigawatt-hours shortfall to be supplied by SCE and/or LADWP, it will require the burning of 801,000 barrels of fuel oil.

14. It will require the equivalent of 135,000 barrels of fuel oil for the 64 gigawatt-hours estimated to be generated by SDG&E.

15. SCE, LADWP, and SDG&E have available electric energy and capacity surplus over their requirements for 1977 and are willing and able to sell such energy and capacity to PG&E.

16. The availability and use of the idle LADWP's Scattergood 3 Power Plant rated at 284 megawatts would enhance the electric reliability of LADWP and the State.

17. Scattergood 3 Power Plant does not have oil burning facilities and, therefore, cannot be used unless natural gas is available.

18. PG&E will have limited Priority 5 natural gas (for steam electric generation) available from its El Paso Natural Gas Company purchases during the summer of 1977.

19. Making some of such Priority 5 natural gas available to LADWP for Scattergood 3 Power Plant will permit the power plant to generate additional energy.

20. PG&E supplies the necessary natural gas for SCE's Coolwater Power Plant in San Bernardino County, rated at 147 megawatts.

21. PG&E should satisfy its natural gas requirements for Coalinga Nose injections, its Morro Bay Power Plant pending completion of work on the marine terminal, and SCE's Coolwater Power Plant, before making natural gas available to LADWP up to the quantity required to offset electric energy purchases by PG&E from southern California during the remainder of 1977, but limited to the intertie gas pipeline capacity of 330 million cubic feet per day.

22. The shift from natural gas to oil fuel at Moss Landing or Morro Bay could result in a boiler tube failure in any boiler tube surface with a heat transfer problem. If this problem develops the minimum amount of natural gas needed to eliminate it should be included within PG&E's gas requirements.

23. SCG can buy, transport, and sell PG&E gas in the quantities to be made available to LADWP and should be reimbursed at a price up to the average cost of transporting the gas.

24. The sale and transportation of natural gas for electric generation in California is subject to the jurisdiction of this Commission.

25. PG&E should be reimbursed for the natural gas it sells up to the incremental cost of alternate fuel for its electric generation.

26. The sale and exchange of electric power and energy for resale as discussed herein is subject to the jurisdiction of the Federal Power Commission.

27. The meteorologic and geographic conditions in the Morro Bay and Moss Landing Basins are conducive to good air quality. The meteorology, geography, and location of major electric power plants in the South Coast Air Basin are conducive to very bad air quality.

28. In terms of air quality the South Coast Air Basin is the most severely impacted air basin in California.

29. The months of greatest concern in terms of air pollution in the South Coast Air Basin are the months of June through September.

30. The additional emissions created in the South Coast Air Basin by the burning of 801,000 barrels of fuel oil to meet the estimated PG&E electrical shortfall will be 947 tons of nitrous oxides and 742 tons of sulfur dioxide.

31. Natural gas is a relatively clean-burning fuel. When used in boilers for electric generation it creates only traces of sulfur dioxide emissions; however, natural gas produces significant amounts of nitrous oxides amounting to about 0.8 to 0.9 pounds per equivalent barrel on the average when used for electric generation in the South Coast Air Basin. The average emissions of nitrous oxides yielded by

the combustion of a barrel of low sulfur fuel oil when used for generation of electricity in the South Coast Air Basin is approximately 1.6 to 1.7 pounds per barrel.

32. Growing shortages of natural gas have caused and will continue to cause increasing amounts of sulfur-bearing fuel oil to be burned in the South Coast Air Basin. Year 1977 power plant fuel use in the South Coast Air Quality Management District is expected to increase about 45 percent over 1976 which will result in an increase of nitrous oxide emissions from power plants from 95 tons per day in 1976 to approximately 163 tons per day in 1977. Also due to increases in fuel oil burning, it is estimated that sulfur dioxide emissions will increase from 166 tons per day to 208 tons per day in the South Coast Air Basin.

33. Assuming no gas is transferred from PG&E, the estimated increases in emissions from SCE's plants range from 2.3 percent to 4.9 percent for  $\text{NO}_x$ ; 0.8 percent to 2.9 percent for  $\text{SO}_x$ ; and 1.4 percent to 3.6 percent for particulates, in the summer months in which energy transfers would take place.

34. The air quality of San Diego Air Basin is better than the South Coast Air Basin.

35. Replacing natural gas by fuel oil equivalent to the transferred electric energy is estimated to increase power plant emissions in Monterey and San Luis Obispo Counties<sup>2/</sup> as follows:  $\text{NO}_x$  8.6 percent,  $\text{SO}_x$  22.5 percent, and particulates 14.6 percent. Data on overall area emissions are not available.

36. A limited time will be required for PG&E to make the necessary arrangements to use oil at Morro Bay and Moss Landing.

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<sup>2/</sup> Locations of Moss Landing and Morro Bay Power Plants.

37. SCG may be transporting Priority 5 gas to LADWP when SCG is curtailing Priority 4 customers.

38. The natural gas transfer for the summer electric shortage is an emergency and is exempt from the California Environmental Quality Act.

39. Increased California gas production could not solve the problem caused by the drought and the need for additional electric capacity on the PG&E system.

40. The costs of the gas transfer and electric capacity transfers authorized herein are properly recoverable under energy cost adjustment clauses.

Conclusions of Law

1. The natural gas transfer from PG&E to LADWP through SCG for the summer of 1977 electric shortage is an emergency and is exempt from the California Environmental Quality Act.

2. The public health, safety, and welfare require the transfer of an estimated 518 gigawatt-hours worth of natural gas generating capacity by PG&E to southern California for the purpose of generation and transfer to PG&E for use in northern California.

O R D E R

IT IS ORDERED that:

1. Respondents Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) shall continue and the Los Angeles Department of Water and Power (LADWP) is encouraged to continue with their joint plans to eliminate the estimated electric energy shortages in northern California that are expected to continue during the summer of 1977.

2. Respondent PG&E shall purchase sufficient electric energy to meet its energy load requirements and sufficient capacity to maintain a margin after maintenance of at least 7.5 percent.

3. Respondents PG&E, SCE, and SDG&E shall continue to stress voluntary conservation to their customers and in particular during the critical period of the summer of 1977. Other privately owned and publicly owned electric public utilities are encouraged to do likewise.

4. Respondent PG&E shall sell from its El Paso Natural Gas Company purchases, natural gas, to the extent it is available, to SCG for sale by SCG to LADWP for its Scattergood 3 Power Plant. Such quantity of gas may be limited to the smaller of the quantity required to offset electric energy purchases from southern California during the remainder of 1977, or the gas which would be available to PG&E for Priority 5 purposes after its Coalinga Nose requirements, after its Morro Bay requirements pending completion of work on the marine terminal, the Coolwater Power Plant requirements of SCE, and the requirements to protect against boiler tube failure if heat transfer problems develop at Morro Bay or Moss Landing, or the intertie capacity of 330 Mmcfd.

5. Respondent SCG shall purchase, transport, and sell the PG&E natural gas to LADWP's Scattergood 3 Power Plant if LADWP is willing to purchase such gas.

6. PG&E shall file with the Commission within ten days after the effective date of this order its offer to sell natural gas to SCG for resale to LADWP at a price no more than the incremental cost of fuel for its electric generation.

7. SCG shall file with the Commission within ten days after the effective date of this order its offer to buy, transport, and resell this natural gas to LADWP at a price no more than the average cost of transporting the gas plus the administrative cost of the purchase and resale.



9. The motion of PG&E to dismiss that portion of the proceedings related to the transfer of natural gas is denied.

10. The transfer of some Priority 5 natural gas on an interim or emergency basis during the summer of 1977 is exempt from the California Environmental Quality Act.

11. The proceedings in Case No. 10292 are terminated.

12. The effective date of this order should be the date on which it is signed because of the electric shortage in northern California caused by the drought.

The effective date of this order is the date hereof.

Dated at San Francisco, California, this 12<sup>th</sup> day of JULY, 1977.

Robert Batmanglich  
President  
William Lyons Jr.  
Vernon L. Spurgeon  
Richard D. Swalle  
Paul J. Delich  
Commissioners

APPENDIX A

LIST OF APPEARANCES

Respondents: Malcolm H. Furbush and Howard V. Golub, Attorneys at Law, for Pacific Gas and Electric Company; Rollin E. Woodbury, Robert J. Cahall, H. Robert Barnes, and Dennis G. Monge, Attorneys at Law, for Southern California Edison Company; Gordon Pearce, C. Edward Gibson, and Vincent P. Master, Jr., Attorneys at Law, for San Diego Gas & Electric Company; and John S. Fick, Attorney at Law, and Jonel C. Hill, for Southern California Gas Company.

Interested Parties: Burt Pines, City Attorney, Edward C. Farrell, David C. Ozden, Deputy City Attorney, and Ralph Guy Wesson, Assistant City Attorney, for the City of Los Angeles, Department of Water and Power; Louis Possner, for the City of Long Beach; Anthony C. Joseph, Deputy Attorney General, for California Air Resources Board and People of the State of California; Mark C. Allen, III, City Attorney, for the City of Los Angeles; Henry F. Lippitt, 2nd, Attorney at Law, for California Gas Producers Association; Brobeck, Phleger & Harrison, by Gordon E. Davis and William H. Booth, Attorneys at Law, for California Manufacturers Association; Downey, Brand, Seymour & Rohwer, by Philip A. Stohr, Attorney at Law, for General Motors Corporation; Sylvia M. Siegel, for TURN; Tom Knox, Attorney at Law, for California Retailers Association; John W. Whitsett, Attorney at Law, for the South Coast Air Quality Management District; John F. Powell, Attorney at Law, for Bay Area Air Pollution Control District; and Allen R. Crown, and Glen J. Sullivan, Attorneys at Law, for California Farm Bureau Federation.

Commission Staff: Lionel B. Wilson, Attorney at Law, and Edmund Texeira.